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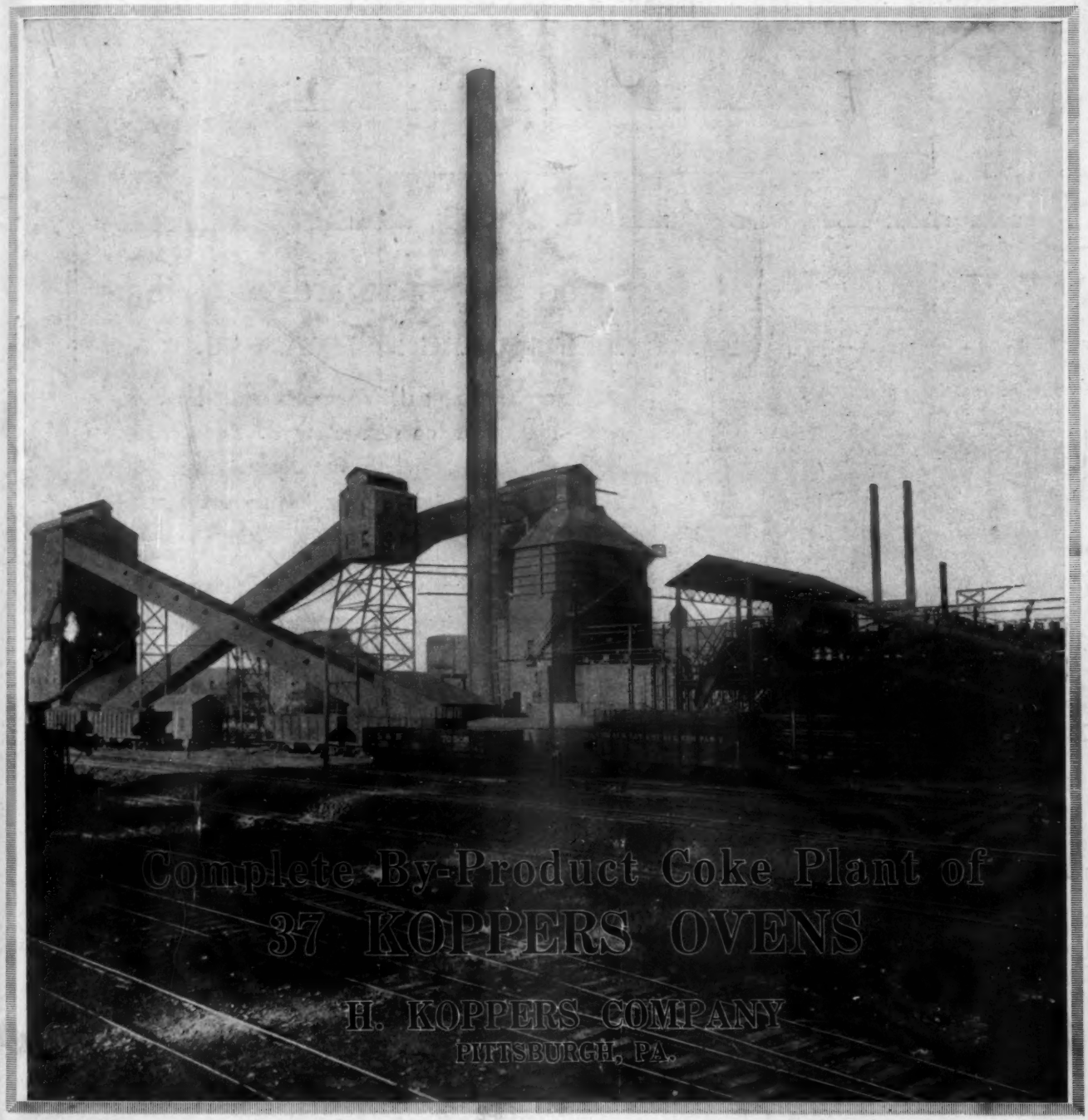

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It Stood the Test

The past winter taxed the service of the gas companies to the limit—When the pressure dropped below 4 oz. the ordinary gas meter usually, not only refused to register, but interfered with the flow of gas to the consumer.

IRONCLAD

THE 100% METER

Stood the test regardless of temperature, and low pressure.

Gas companies, partially equipped with "Ironclads" found that their consumers served through high-absorption meters, had practically no gas when the pressure dropped to 1 oz., while those served through "Ironclads" had an ample supply.

Throughout the severe winter "Ironclads" gave eminently satisfactory service everywhere, and we have yet to hear of even one complaint, regardless of the gas company's pressure.

Next winter may find you with lower pressure—Prepare, now, for the worst.

Pittsburgh Meter Company

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New York, 149 Broadway
Chicago, 5 South Wabash Ave.
Kansas City, 6 West 10th St.
Seattle, 802 Madison St.
Columbia, S. C., 1433 Main St.
Los Angeles, 930-931 Union Gas Bldg.

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In Setting Standards Question is Not what Consumer Receives But the Practical Efficiency Realized

The Main Object of the Management Is to Give the Consumer the Best Possible Value for His Money—George Helps Pleno Gas—Advantage of the Solid Flame as Compared to the Hollow Flame

By NORTON H. HUMPHRYS

During the last few months considerable interest has been attracted in gas circles by the proposals put forward by George Helps, which involve not only radical changes in manufacturing conditions, but also in those of supply, and to which he has attached the title of "Pleno Gas." It is not, however, so much a "new" gas, as an adaptation of existing methods, and does not involve wholesale "scrapping" of existing plant. We are not at present concerned with the process of manufacture, which is covered by patent, but with the new ideas in respect to combustion of gas under ordinary everyday conditions, which Mr. Helps incidentally puts forth.

There can be no doubt that high standard regulations have been a serious hindrance to active progress in the gas industry for some years past, by reason of the erroneous assumption that the statutory requirements fairly represent and are on all fours with the best interests of the consumer, and that the composition and quality of the gas are a correct index of the value that he gets out of it in practice.

But the question is rather not what he receives, but the practical efficiency realized.

Suppose that the quality of the supply is such as will enable it to safely run the gauntlet of a 600 B.t.u. test by the official inspector, but that the average consumer only practically utilizes 400; and further, that a 450 B.t.u. gas could be furnished at a substantially lower price, out of which the consumer still gets 400.

In such case the official standard, so far from benefitting the consumer, is a direct source of loss to him, and it throttles the gas industry by diverting the attention of the management from the main object of giving the consumer the best possible value for his money (which is not necessarily a higher power gas, but B.t.u. or other tangible value at the lowest price), to a bare compliance with the official requirement which is quite another thing.

So long as gas was used in flat-flame burners, and in small units, chiefly for domestic purposes, the importance of this point was not very obvious, but with increased size of the unit, coincident with the introduction of large industrial appliances, it is daily becoming more prominent.

Insuring Complete Combustion

Mr. Helps is at present publishing a serial article in the columns of *Gas*, under the title of "Notes on Pleno Gas," which includes examination of gases of different quality and composition, ranging from 900 B.t.u. natural gas to 140 B.t.u. producer gas, which go to prove that the foregoing is nearer fact than fancy, as the complement of air requisite for complete combustion varies *pro rata* with the quality, and the richer the gas, the greater the difficulty of ensuring complete combustion under everyday conditions. For some time past, the cardinal mistake has been confining attention to the composition of the gas at the inlet of the meter, which might suit old-time conditions, but now that the Bunsen burner accounts for 95 per cent of the total consumption, more important matters are the composition of the mixture of gas and air that is supplied to the flame at the burner head and the ratio of such to the total complement or air requirement.

In addition to the familiar terms of "primary" and "secondary" air, Mr. Helps introduces new ones, such as "admixture," to indicate the gas *plus* primary air, and "pleno-mixture," the gas together with the full complement of air necessary for its complete combustion. He brings out the remarkable facts that the less the proportion of air in the "pleno-mixture," i. e., the lower the quality of the gas, the larger will be the proportion of the total air in the "admixture"; and that with a 350 B.t.u. gas it is practicable to secure such a high ratio that the resulting flame has no interior cone, but

is solid. Also that the heating value of the pleno-mixture per cubic foot is practically the same for all combustible gases, irrespective of the composition of the neat gas.

Advantages of Solid Flame

The advantages of the solid, as compared with the hollow flame are that complete combustion and the development of the total heating value is assured, and there is no risk of nuisance from incompletely oxidized products; and as the solid flame can safely be brought into close contact in thin sheets with the vessel to be heated, which may approach within less than half an inch of the burner head, a marked increase in efficiency is secured under everyday conditions.

The figures quoted in support of the second point show that all combustible gaseous mixtures fairly free from inert gases have a value of about 84 B.t.u. per cubic foot of "pleno-mixture." Natural gas (900) is 84.4, coal gas (550) is 84.6 and blue water gas (273) 82.6. Producer gas, which contains a large proportion of inerts, is 58.2. The effect of mixture with even large proportions of nitrogen is much less than *pro rata*, 40 per cent added to coal gas only reducing the value of the pleno-mixture to 76.8, and with water gas to 68.8, while air added in any proportion does not alter the value of the pleno-mixture. Coal gas may be mixed with blue gas in any proportion with practically no effect on the value, although that of the neat gas falls *pro rata* with the proportion of blue gas.

Full data on which these conclusions are based are included, from which the calculations can be verified, or applied to any quality of gas, and Mr. Helps is not an inventor of the chimerical order who possibly knows nothing about the inward parts of our industry, but as a prominent member of the gas engineering profession has been actively identified for many years with the manufacture and supply of town gas, and has successfully pioneered several important innovations in connection with it.

He asks: "Are a given number of B.t.u. in a gas requiring only three times its volume of air for complete combustion, which easily produce a solid flame, of more value to the consumer than a high-grade gas as at present supplied and consumed, requiring five volumes of air, when the former costs about one-fourth of the latter?"

There are special reasons at the present time why a proposition of this nature should be carefully considered, and that there is much in it is proved by the fact that, to personal knowledge, in some instances shortage of oil and other war-time conditions has led to the supply of considerable quantities of 400 B.t.u. gas, and that no one has been injured thereby. Consumers have not thought it necessary to take action, and the complaints of high bills or bad service have not increased above normal, which proves that a general kick-off of the official shackles (for the time being temporarily suspended) would tend to the advantage of all concerned.

Difficulties Incidental to Uniform Quality at Burner Almost Insurmountable

I conclude with a quotation from a recent report issued by the inspector to the Massachusetts Gas and Electric Commissioners:

"Good service consists of uniform quality of gas supplied under uniform pressure through efficient appliances kept properly adjusted. The gas should be of such quality that the consumer gets the greatest amount of useful, available heat at the least cost. If the calorific value varies, the service rendered to the majority of the consumers will be impaired."

It is well known that the difficulties incidental to uniform quality at the burner are almost insurmountable in the case of rich gases, but that a low quality is easily controllable. To some extent, also, the higher the quality of the gas the greater the liability of condensation of liquids, which in practice are prejudicial to uniformity of pressure. Pleno gas is a carefully worked out and courageous attempt to meet the requirements indicated by Charles D. Jenkins, of Massachusetts.

Measuring Soaking Pit Gas Consumption

Apparatus to show the total quantity of coke-oven gas consumed in the soaking pits at the plant of the Brier Hill Steel Company, Youngstown, Ohio, has recently been made by the Cutler-Hammer Manufacturing Company, Milwaukee, Wis. In addition to showing the total quantity of gas used on an integrating meter the rate of flow is shown graphically on a curve-drawing instrument.

The operation of the meter used has for its basis the measurement of the heat capacity of a gas electrically. This heat is supplied by a current of electricity flowing through a heater consisting of resistance material. The temperature difference between the two ends of the apparatus is kept uniform and the number of watts required to maintain this figure varies directly as the quantity of gas flowing. In this way, the energy input in watts forms a measure of the quantity of gas flowing and is measured by a wattmeter of either the graphic recording or the indicating type, or in this case both. The fixed temperature difference, which is 2 deg. Fahr., is maintained by the action of a device made upon the same general principle as the autographic temperature recorders used in connection with resistance thermometers, and is constructed on principle of the Wheatstone bridge operating to change the energy input to the heater, according to the difference in the electrical resistance of the two thermometers. This variation depends upon the extent to which the temperature of the gas passing through the screen at the outlet end of the meter has been raised by the heater, and as soon as it becomes greater or less than that corresponding to the desired difference the amount of current is varied to produce the standard temperature variation. As the flow of gas increases the difference has a tendency to decrease as additional energy is introduced to heat the increased weight of gas so as to maintain the constant temperature difference.

The thermometers used in connection with the meter are in the form of screens of nickel wire placed so as to come in contact with all the gas passing through the meter. The electrical resistance of the screen changes in proportion to the changes in the temperature and any variation in the difference of temperature between them causes an increase or decrease in the amount of electrical energy required to maintain a fixed temperature change in the gas since the screens form two arms of a Wheatstone bridge.

Designing Natural-Gas-Gathering Line System for Gasoline Plant

Many Existing Systems Are Either Too Large or Too Small—Present-Day Conditions Necessitate that They Be Planned with Intelligence

By E. O. HICKSTEIN
Bartlesville, Okla.

The increasing number of gasoline-from-natural-gas plants being built together with the higher cost of pipe and labor is causing engineers to give more study to the design of the pipe-line systems for bringing the gas from the wells to the gasoline plant.

In the early days of the industry, such gathering lines were constructed without any particular attention being paid to the question of sizes of pipe to be used. As a result, there are systems in operation to-day that have too large lines, others with lines too small. At the prevailing cost of pipe and machinery, it is nearly as expensive to use pipe larger than necessary as to reduce plant capacity by the use of too small lines. In this paper the writer will show his method of working out such a pipe-line system, taking a complete design for an example.

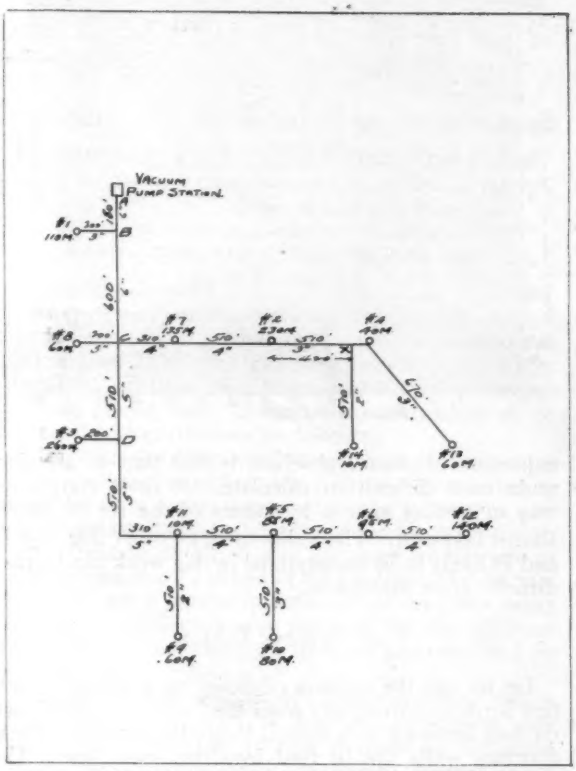
Advantage of Putting On Vacuum

The gas which is produced by an oil well is known as casing-head gas. This gas, being in much closer contact with oil than is the case for "dry" gas (i. e., ordinary natural gas, from well not producing oil), is frequently rich in gasoline, occasional samples running up to 10 gal. per 1,000 cu. ft. of gas. It is pretty well proven that "putting a pressure on the casing-head gas," which means restraining its free flow from the well, either into the air or into a pipe line, will reduce the oil production of a well. Therefore, in a majority of cases, any casing-head gas produced on a lease in excess of its fuel and power requirements is wasted. This is so because its utilization as a commercial product is prevented by the cost of compressing the low-pressure gas and transporting it to a gas pipe-line system.

In the same way that a gas pressure will reduce the oil production, putting a vacuum on the gas is thought to increase the production. It has therefore become the custom, wherever it is permitted, for the oil producer to pull a vacuum on his casing-head gas. This is especially advantageous where a gasoline plant is installed, as the gas produced will be richer in gasoline, due to the lower boiling points of the various hydrocarbons under a vacuum. From the foregoing it will be seen why practically all gathering line systems for casing-head gas are designed to be operated on a vacuum.

The use of the pipe-line formula of T. R. Weymouth* in the design of gathering line system is to be recommended on account of its being by far the most reliable.

*"Problems in Natural Gas Engineering," paper read before the Am. Society of Mech. Engineers, Spring Meeting, 1912, by Mr. Weymouth.



LAYOUT OF TYPICAL GATHERING SYSTEM

This formula reduces to

$$Q = \frac{K}{\sqrt{G}}\sqrt{\frac{P_1^2 - P_2^2}{l}} \quad \ldots\ldots\ldots\ldots (1)$$

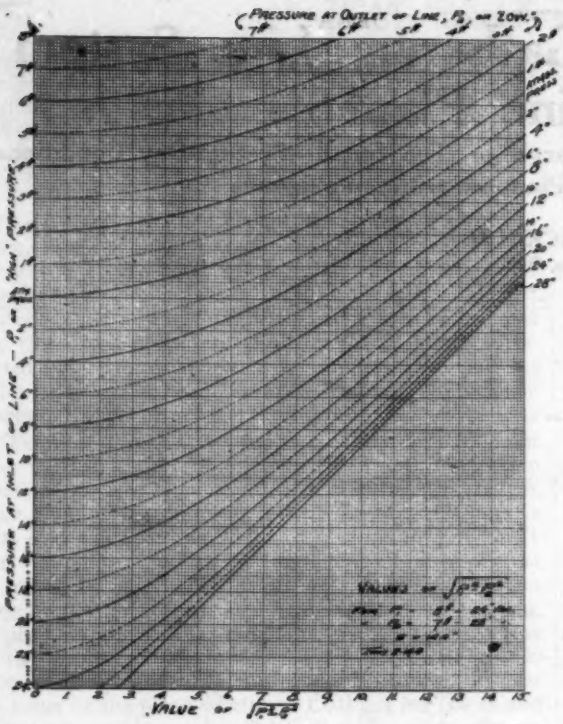
where Q = thousands of cubic feet of gas per twenty-four hours, gas being measured at 60 deg. Fahr. and 14.4 lb. absolute.

G = gravity of gas, air being 1.00.
P_1 = pressure in pounds absolute at inlet to line.
P_2 = pressure in pounds absolute at outlet of line.
l = length of line in feet.
K = constant varying with size of line.

The values of "K" to be used in the above formula are:

2-in.	342	6-in.	6,215
3-in.	992	8-in.	13,050
4-in.	2,070	10-in.	23,880
5-in.	3,725		

The value of $\sqrt{P_1^2 - P_2^2}$, where both P_1 and P_2 are



expressed in pounds absolute, is that part of the formula most difficult to calculate. A most convenient way of getting at it is by means of the set of curves shown herewith. The value of $\sqrt{P_1^2 - P_2^2}$ for any P_1 and P_2 likely to be encountered in this work can be read directly from the curves.

A Typical Design

Let us take the problem of designing a gathering system for transporting gas from the fourteen wells shown on map herewith to a station located as shown. These fourteen wells are to feed into one main line. The station site has been located centrally to all the wells to be connected up, and perhaps half a dozen gathering lines will run radially to all corners of the territory to be covered.

The map shows the quantity of gas each well is expected to produce, expressed in thousands of cubic feet per day. This quantity is arrived at by making actual tests at each well with an orifice tester. It is advisable to make at least two tests at each well; the final figure is usually taken at 75 per cent or more of the average of the tests. The fourteen wells we are considering will produce 1,375 M. ft. of gas. Let us assume that we are planning to carry 15 in. of vacuum as the intake on the vacuum pump. This figure is good practice, for as the wells are "pulled on" the gas production will diminish, and the vacuum at the pump intake will go to 20 in. or higher. As far as the pressure at the wells is concerned, it is usually considered desirable to carry a vacuum on even the furthest well. In the case of wells producing only small quantities of rich gas (wells averaging 1 to 10,000 ft. per day, for example), the vacuum at the farthest well may often be as high as 15 to 20 in. With larger quantities of gas (presumably not as rich in gasoline), a vacuum as high as 20 or 25 in. intake would call for too much pump capacity. In our problem, let us say we are required to have at least 5-in. vacuum at each well. These two figures—15 in. at the intake and at least 5 in. at the well—are a matter of arbitrary choice, based on an estimate of future operating conditions. Given the two figures, we are able to decide on the sizes of lines.

Arrangement of Lines

The arrangement of the lines and their sizes to some degree are influenced by the location of future drilling, if any is planned. In our problem, the south border of the "lease" is just a little south of wells No. 9 and No. 10; future drilling is contemplated to the east, and especially to the west. It is usually safe to figure that the gas production of new wells on such a lease as we are considering will never quite counterbalance the drop in production of the wells already drilled; or, in other words, the total gas supply will decrease. New drilling, however, might possibly make some individual line carry more gas than the present combination does. This leaves a little room for the use of judgment on the part of the engineer.

The gas on this lease is known by actual test to have a gravity of 0.9. The values of $\frac{K}{\sqrt{G}}$, for the various sizes of line for our problem, would therefore be:

2-in.	360	5-in.	3,925
3-in.	1,047	6-in.	6,550
4-in.	2,180	8-in.	13,750

Rewriting formula (1), we have

$$\sqrt{P_1^2 - P_2^2} = \frac{Q\sqrt{l}}{\left(\frac{K}{\sqrt{G}}\right)} \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

The formula as now written enables us to design the gathering system piece by piece. Starting at the station, let us consider the line AB, as shown on the map. For this piece, $Q = 1{,}375$, $l = 180$, $P_2 = 7.05$ lb. (15-in. vacuum). Let us "try" a 6-in. line; then

$$\sqrt{P_1^2 - P_2^2} = \frac{1{,}375 \times \sqrt{180}}{6{,}550} = 2.82$$

From the $\sqrt{P_1^2 - P_2^2}$ curve herewith, we find that if $\sqrt{P_1^2 - P_2^2} = 2.82$ and $P_2 = 15$ in., then $P_1 = 13.6$ in., i. e., there is a drop in pressure (or gain in vacuum) of 1.4 in., or 0.7 lb. through the 180 ft. of 6-in. line. This pressure drop is about right for our particular problem, indicating that 6-in. pipe is the proper size. If the calculated drop comes out too large or too small, a larger or a smaller size of pipe must be used.

This process of "cut and try" is carried out for every piece of line. The correct design for our problem is shown in the table, which summarizes the results.

To complete the example, the writer will figure the cost of the gathering line system as designed (price of pipe as of Dec. 31, 1917). Prices include the completed pipe line, buried shallow, in good ground, an average 5-mile haul from warehouse to lease.

Pipe Sizes	Cost Per Foot	Labor Per Foot	Total Per Foot	Extension
1,020 ft. 2-in..	0.21	0.08	0.29	$295.80
2,290 ft. 3-in..	0.51	0.12	0.63	1,442.70
2,350 ft. 4-in..	0.72	0.16	0.88	2,068.00
1,330 ft. 5-in..	0.96	0.19	1.15	1,529.50
780 ft. 6-in..	1.28	0.21	1.49	1,162.20
Total cost.....				$6,498.20

SUMMARY OF RESULTS OF CALCULATIONS AND DESIGN

Piece	Quantity M. Cu. Ft.	Length Feet	Size of Line	Vacuum at Outlet of Piece			Vacuum at Inlet to Piece
AB	1,375	180	6 in.	15.0	2.82		13.6
B-1	110	200	3 in.*	13.6	1.49	(1)	13.2
BC	1,265	600	6 in.	13.6	4.73		10.6
C-8	60	200	3 in.*	10.6	0.81	(8)	10.5
C-7	475	310	4 in.	10.6	1.76	(7)	10.2
7-2	340	510	4 in.	10.2	2.26	(2)	9.6
2-4	110	510	3 in.	9.6	2.38	(4)	8.9
X-14	10	510	2 in.	8.9	0.63	(14)	8.8
4-13	60	670	3 in.*	8.9	1.49	(13)	8.6
CD	730	510	5 in.	10.6	4.20		8.8
D-3	260	200	3 in.*	8.8	3.52	(3)	7.5
D-11	470	820	5 in.	8.8	3.43	(11)	7.6
11-9	60	510	2 in.	7.6	3.75	(9)	6.2
11-5	400	510	4 in.	7.6	4.14	(5)	6.0
5-10	80	510	3 in.	6.0	1.73	(10)	5.7
5-6	235	510	4 in.	6.0	2.43	(6)	5.5
6-12	140	510	4 in.*	5.5	1.45	(12)	5.0

The lines indicated with an asterisk (*) are chosen somewhat larger than absolutely necessary for present purposes, with a view of better meeting any possible future needs.

The vacuum resulting at the various wells are shown in the last column of above table, the well numbers being indicated by figures in brackets.

Can Lower Fuel Bill 5 Per Cent

The function of the soot blower is to be capable and ready at all times to clean off every particle of soot from the tubes. All the fireman has to do is to turn on the steam and then pull a chain leading to a sprocket valve wheel and the soot cleaner elements are thus rotated, and a few seconds of the mighty steam blasts through regular steam turbine nozzles down between the rows of tubes cleans them off in fine shape.

The effect of the clean tubes is to reduce the temperature of the flue gases, and that is just what is wanted. The lower the temperature of the chimney gases the better—the more efficient the boiler.

In selecting a soot blower the trick is to get the kind that reaches every tube most easily and logically. The cleaner elements must be placed in commanding positions. Yet they must not be in places that are so hot as to cause them to burn up in a short time. They must be entirely enclosed within the boiler setting, so that the fireman will not have to let in any cold air in order to do the blowing. They must not permit any of the nozzles to direct the steam jets directly against the tubes. Where direct impinging is allowed serious erosion is liable to occur.

A soot blower is not liable to save so much money per year as can be saved through proper use of a CO_2 recorder, yet they generally lower the fuel bill 5 per cent per year or more, and that is assuredly an important item. Thus if the yearly fuel bill for a given plant is $50,000 per year, the soot cleaner will save $2,500 per year, which will much more than pay for the cleaner.

The fact that large power stations all over the country are installing these soot cleaners as rapidly as the stations are being built is proof that they are an economy factor.

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Cracking Oil in Coal Gas Bench and Removing Light Oil From the Gas*

Terre Haute Company Changes from Coal and Water Gas Mixture to Oil Gas Made in Retorts and Blue Water Gas Mixture Without Anyone Except Those Directly Informed Being Able to Detect the Difference

By C. D. SHAUL

This paper will treat briefly of the methods and results of cracking oil in coal gas retorts, recovering the light oils and selling the gas for commercial purposes.

In February, 1915, the Citizens Gas & Fuel Company, of Terre Haute, Ind., proceeded to thermalize oil in fourteen benches of sixes as follows:

A large gravity tank was located some distance from and elevated above the benches. The gas oil was fed to the retorts by a pump connected to the oil storage and also the gravity tank, making the latter an auxiliary, so that any excess of oil on this line used by the retorts would be temporarily stored in the gravity tank. Should the retorts use a greater quantity of oil than was being pumped, the deficiency was made up by the oil from gravity tank, it maintaining a constant pressure head on the retort feeds.

The retort feeds consist of small regulating valves which allow the gas oil to flow at any desired rate through sight feeds into funnels attached to "U" seals. The seal was connected by ½-in. pipe to the mouthpiece of the retort. Here the gas oil enters the 4-in. vapor pipe laying on the bottom and grading to the rear of retort. Upon entering the vapor pipe the oil is vaporized and the oil vapors flow out the back end into the retort, where they come into contact with walls of retort of about 1,300 deg. temperature.

EFFECT OF HEAT TREATMENT

The effect of the heat treatment is to crack or chemically change the various hydrocarbons of the gas oil.

These chemical changes are numerous and complex, depending to a great extent upon the length of the time that the oil vapors are subjected to heat treatment, and the degree of heat as well as character of the original raw oil.

The temperature of the hydrocarbon gases and vapors emerging from the retorts is so high that all of them are carried along in a gas and vapor form to the condensing apparatus, which removes a large quantity of light oil and leaves the gas nearly free from vapors.

The remaining vapors are absorbed in a rotary

*Paper presented at annual convention of Illinois Gas Association, Indianapolis, April 24.

scrubber by means of wash oil. From here the gas of 1,300 B.t.u. is taken through purifiers, sulphur removed and diluted with blue gas at the inlet to holder, and the wash oil is circulated through a continuous still and light oil extracted.

Average Recovery

Twenty gallons of gas oil was cracked per 1,000 cu. ft. of gas made, and from this 1,000 cu. ft. of gas the average recovery was about 3 gal. of crude light oil, 0.9 gal. of benzene, 0.56 gal. of toluene, 0.5 gal. of solvent and 3.6 gal. of tar. The recovery of light oils is about 50 per cent of the oil thermalized when using gas oil.

Composition of the light oil is:

Loss in washing	12 per cent
Benzene	24 to 35 per cent
Toluene	16 per cent
Naphthalene	2 to 3 per cent

Thermalizing solvent naphtha in the retorts instead of gas oil, the light oil shows the following composition:

Loss in washing	10 per cent
Benzene	10 per cent
Toluene	14 per cent
Solvent naphtha	40 per cent
Naphthalene	1 per cent

Cracking oil in water gas machines, the light oil shows the following composition:

Loss in washing	4.4 per cent
Benzene	14.1 per cent
Toluene	20.3 per cent
Solvent naphtha	12.9 per cent
Naphthalene	6.3 per cent
Residue	42.0 per cent
Specific gravity	15.5 per cent

We were much concerned that this change of manufacture from a mixture of oil gas and blue gas would interfere with the quality of service to the consumers, so the change was made gradually, taking off one coal gas and putting on an oil bench a day until the entire change was completed in two weeks.

No Difference Noticeable

This oil gas was usually a 1,300 B.t.u. gas and the blue gas about 300 B.t.u. They were mixed in a ratio that would produce a mixed gas of 600 B.t.u. Hourly readings of the mixed gas and oil gas, and occasional readings of the blue gas heat value, were taken from the moment of starting operations.

This system was very flexible, as it was planned to control the heating value by increasing or decreasing the oil gas percentage. It was much more flexible than necessary, as it was possible to produce anything from a 300 to a 1,300 B.t.u. gas by entirely shutting off either the oil or blue gas. In actual operation, the heating value was regulated by frequent but small variations of the percentage of oil gas used. The change from the coal-and-water-gas mixture to this new mixed gas was made and the new gas distributed without complaints, and without the consumers knowing a change had been made. The gases intermixed thoroughly, so it was never necessary to change the point of uniting them to the relief holder, as at first intended.

The specific gravity of this mixed water gas and oil gas was 0.506. The gravity of the mixed gas differs but little from the gravity of the mixed coal and water gas previously distributed. After three months' operation no one not directly informed has noticed a change in the city gas.

Points Out Need of Scientific Management in Gas Works

When the war is over the cry will be for a suitable and cheap gas, and the industry must speed up to supply this, declared C. E. Teasdale at the annual meeting of the Manchester and District Junior Gas Association (British). With this as the goal, two things are essential—increase in production and the avoidance of waste. The main endeavor must be to build up "efficiency works"—to systematize and to introduce scientific management to the industry, not merely in the manufacture of gas, but in the works of gas works contractors; for the contractor, by systematizing on the higher industrial management, would bring his work to a higher state of efficiency, so helping his benefactor, the gas undertaking, in its bid for the deal.

Perhaps it may not be possible to create an ideal system on a gas works, but it is possible to modify our methods considerably and a reconsideration of our long-practiced methods as applied to a gas undertaking is necessary. Scientific management means being well informed as to the best thing to do, the best way to do it, and the best rate at which to do it, and is based on a system in which the whole routine of the works to the last operation is organized by the management, so that confusion, overlapping, delay and waste (both human and material) are avoided, and the course of the work is planned as smoothly, rapidly and efficiently as possible; that the right worker be put in the right place to which he is most fitted; that he be trained to produce the best results in that position, and that the haphazard placing of men be abandoned. The question of fatigue is studied very carefully, and overstrain is not permitted, and unnecessary movement and operation are eliminated. Everything is arranged to give the least amount of exertion to the worker, and the result is that a shorter period is required for the effective performance of any particular work. The worker is encouraged and recompensed by a system of payment by results. Scientific management bridges the gap of antagonism between master and man. It helps us to build up our "efficiency works." It would increase the duties of the management, and require a larger staff for its manipulation. An extra clerk or two might be required, but what does that matter if the saving in cost is so much greater? Why do managers so often jib at starting another clerk when they think nothing of putting on an extra workman or two?

Careful study of the working time of all classes of machinery might result in the saving of a great amount of wear and tear and labor costs. For instance, what proportion of the twenty-four hours did the running on full load of coal elevators and conveying machinery

bear to the time taken in running on part load, empty, or not running at all? One would probably be astonished if the "load-hours" were carefully observed and compared with the total hours worked. How often are the elevators working with the buckets only one-quarter filled with coal? What is the reason for this? Is it that the elevator is running too quickly or the feed of coal to the elevator too slow? Educate the man in charge and educate all employees in their particular job or part of a job. Talk to the worker personally, encourage him to make suggestions, listen attentively to what he has to say, be patient and tactful. A skilled or even a semi-skilled man with intelligence and capability to consider and modify his methods is necessary to the building up of an "efficiency works." Let a works committee be introduced by those that have none, and let those that have make the most use of them. Bring things up for consideration that will interest all.

Payment by results is part of the scheme of scientific management, and should receive careful study by all, whatever method may be adopted. Let the worker prosper with his employer, and so weld together the interest of both in the making and working of an "efficiency works." The slacker would have no mercy from his mates; he would have to do his fair share or "get out."

The men of the future must be educated to the level of the "efficiency works." Why should not the junior in the gas industry give part of his week's time to the laboratory, in the drawing office or on the works, as the case might be, and the remainder to study at a suitable college or university?

Training Women for War Work

The training of women for work is described in a paper by C. U. Carpenter, Ohmer Fare Register Company, Dayton, Ohio, at a meeting of the Cincinnati Section of the American Society of Mechanical Engineers on March 21. The paper described the methods used by that company in training the several thousand women employed by it in the manufacture of time fuses for shrapnel and high explosive shells, work in which the highest accuracy is required, and in parts of which the limits of error are not over 0.0015 in. The women have proved themselves to be remarkably proficient and in certain cases able to produce a larger quantity than men.

The fundamental requisite for this success was stated to be the establishment of a training school, in which the women are trained for the particular job they are to perform before being sent into the shop on commercial production. When the women are sent directly into the shop to receive their training, the experiment is not highly successful. The women show extreme nervousness and the percentage of spoiled work is high. Furthermore, as operators of adjoining machines are depended on to instruct the new workers, the production of the trained operators suffers, and the learners receive only indifferent instruction.

Another factor which contributes to the success of the training school is the use of women for instructors. Where men are employed to demonstrate the machine operations, a large percentage of the women refuse to believe that they can do the same work as a man. With women teaching them, however, the spirit of emulation is aroused, and but a small fraction of the learners fail on account of a belief in an inability to master machine work. The women instructors, too, couch their instructions in familiar language. As a single instance, the similarity between the action of a tool cutting metal to that of a knife in peeling potatoes was pointed out.

The women workers are drawn from all grades. They include maids, school teachers, house workers, clerks—in fact, women from every branch of industry. No attempt was made, after the training school was in full operation, to teach fundamental principles, as it was found that this only confuses, and serves no good purpose. The women are taught a single operation, and taught to perform that well. They are paid a wage of 20 cents per hour while learning, and as the percentage of defective product turned out by the school is extremely low, the school more than pays for itself. An average of seven to ten days is spent in the school, after which the women are sent into the shop. Their work there is carefully watched by the foremen, and their instruction continues where necessary.

The results of these methods are almost unbelieveable. Where the best production of a certain piece had been, prior to systematic instruction, nine pieces per hour, time study showed that a fair requirement would be thirty-five pieces. Many of the women made over fifty pieces, some over sixty, and one regularly turned out from seventy to seventy-four pieces per hour. Some of the women became so proficient that they insisted upon setting their own tools.

The women are paid a bonus upon all production above the standard set by time study, and precautions had to be taken to prevent their overworking. In the case of assembling operations a group bonus is paid, and divided among a group of workers assembling one part. The assemblers on each part are grouped at one assembly bench, each performing a single operation and passing the partially assembled piece down the line from one to the other. Any lagging by a single worker brings on her pressure from the entire group, inasmuch as she is thereby affecting the bonus earnings of all. This system, coupled with the training in the school, produces remarkable results.

The women are used not only for assembling, but for the operation of screw machines, drill presses and lathes, and also for inspection. In all these capacities they prove themselves, for single operations, fully the equal of men.

It's Raining Heavily

"Wait a minute, Jack," Sam Patriot called to his friend, as the latter hurried down the street. "Where are you bound?"

"Me? I'm going to the baseball game," replied Jack, as he halted until Sam came up. Together the two walked down the street.

"Mighty bad weather for a baseball game, isn't it?" inquired Sam. "Suppose it rains before the game is over?"

"The game will be called off," Jack informed his friend.

"And you'll lose the price you paid for admission?"

"Oh, no," hastily explained Jack. "They give you what is called a rain check, and if the game is called on account of rain, it is simply postponed, and your rain check will admit you the next time. You don't lose a cent."

"That's a fair proposition then, isn't it?" said Sam.

"It certainly protects you. The baseball people don't pay you anything for waiting, do they?"

"Certainly not!"

"Suppose they were to offer to pay you interest on the rain checks," Sam said, "would that appeal to you?"

"Would it?" asked Jack. "I'd pray for rain every game! But that's a ridiculous idea."

"No, it isn't so ridiculous," denied Sam. "Furthermore, I intend to point out to you that it is being done. Your Uncle Sam is issuing rain checks and he is paying you interest on them. He is at war now, and in order to maintain his armies and navy, he needs an unprecedented volume of goods and services in order to produce supplies for his fighting forces. The same men and the same raw material which are converted into goods and services for Uncle Sam were employed to produce the luxuries and other commodities of peace. As the supply of men, material and manufacturing facilities are limited, you, I and the other fellow must give up some of his luxuries, or else the army and navy must lack equipment and supplies."

"True enough," observed Jack. "But what about the rain check which Uncle Sam issues and on which he pays interest?"

"Those are the War Savings and Thrift Stamps," said Sam. "By doing without those things not essential to health and efficiency—needless luxuries—you can save money. And by investing that money in War Savings Stamps, you automatically release to the Government the labor and material that it needs for winning the war.

"The Government doesn't ask you to give your money, or to do without luxuries forever. Uncle Sam simply asks that you back up the fighting men by postponing your purchases. He wants your game of pleasure and luxury postponed on account of the rain of bullets that the Huns are directing at our fighting lads. War Savings Stamps are the rain checks I'm speaking of. If you buy one now for $4.16, Uncle Sam will pay you $5 for it Jan. 1, 1923, which is interest at 4 per cent, compounded quarterly. In Thrift Stamp form, each stamp costs 25 cents. When the rain of bullets is over you'll be welcome to all the luxuries you want."

The Working of the New Gas Regime in Paris

Rates Based on the Principle of Taking Care of the Little Fellow—How the System Works Out

By FRANCIS MILTOUN

Since the 1st of April the price of gas for Paris consumers, for all purposes has been raised to 40 centimes per cubic meter, with a reduction to 30 centimes for a consumption inferior, or equal, to a cubic meter and a half per day. The cubic meter is the equivalent of 35.32 cu. ft. and 40 centimes the equivalent of 8 cents. Approximately this is $2.16 per 1,000 cu. ft. Before the raise it was half that, say $1.08, or a trifle less if we take into consideration the value of exchange to-day.

The readings are to be calculated on the day basis as between two takings of the meter, and this without any lapping over. Each period is to be figured on the base of the required "base" per day. The company has delivered itself of a little formula that any householder may understand. You have to explain things when you are dealing with the *bourgeoisie* in France. They have to be shown. They are all from Missouri. Thus the formula: If the March reading of the meter, which ran from the 8th of March to the 17th of April—forty days—was 200 meters, the daily consumption is estimated at 5 meters and the rate of 40 centimes applied to the April end of the transaction. This is the reverse of the usual process, whereby the large consumer benefits from a pro rate price reduction. The gas company and the national government of defense alike do not want to encourage the big consumer these days; in fact, they are doing all they can to discourage, as well from the fact that the raw material is short and costly as from the fact that what there is of it is needed for other purposes.

Forty-Day Bills

For a fact, also, the first reading, which comprised March and a part of April, assumes that the twenty-four days left of March on the basis of 5 meters cube per day will be paid for at the old rate of 20 centimes = 24 francs; while the sixteen days of April account for 80 cubic meters, which will be paid for at the reduced rate of 30 centimes, on the basis of 1½ meters per day = 7 francs, 20 centimes, while the surplus of 80 meters, less 24 meters, will pay the full rate of 40 centimes = 22 francs, 40 centimes.

For future monthly (forty-day) bills the subscriber will have the right of paying for 548 cubic meters per annum (1½ meters per day) at the reduced 30 centimes rate. Herein enters a complication. There is a clause in the charter which provides that those whose rent is more than 500 francs ($100) per annum will pay for 55 cubic meters at each of the ten readings during the year at the rate of 30 centimes and the surplus at the rate of 40 centimes. If the subscriber's yearly rental is less than $100, and the reading is made only five times a year, he will benefit with respect to 110 meters of the 30-centime rate, and the surplus at the 40-centime rate.

Complications

The complication is all for the benefit of the subscriber, if he can figure it all out, and it is not so complicated as it seems, and there is a still further benefit for those of modest means who pay a mere nominal rental, though there are not many among the 700,000 or so subscribers. This is a species of that celebrated French paternalism which takes care of the weak brothers of the community, and is altogether commendable, whatever may be the by and large opinion when viewed at a distance. If there were a greater simplification doubtless the revenue for the company would not be so great as it is destined to be, and there is no question but that the companies need the revenue, as it was estimated not long since that those operating in the Paris region alone would result in a deficiency of 60,000,000 francs.

This reconstruction of the gas tariff was made necessary by conditions over which the companies had no control. It has been handled admirably in Paris, as also in many cities of the provinces, not always with liberality, to be sure, but even a corporation cannot do impossibilities. The fact that in Paris has only just now come into being the inevitable rise in price is an indication of how sagaciously the municipality and the

companies have worked together. One thing which will tend greatly to the smooth operation of the new regime is the fact that it goes into effect almost simultaneously with the "summer hour," when gas for illuminant purposes is at its lowest ebb, and even those on whom it cannot be counted to economize will economize nevertheless. As a final result the procedure will enable the companies to reconstitute their stocks of coal for the coming winter, and this of itself may be the means of preventing the coming into being of still further restrictions which might otherwise have been made necessary.

Coal-Gas Propelled River Boat

A curious development on the side, or it might have been a development had France itself been a large producer of gas coal, was the possibility of using illuminating and heating gas for the running of automobiles as has been done in England. Here this was frowned down from the very first, owing to the conditions which have brought about the restrictions in domestic consumption. The result is that the private auto, any auto not working for government account, is as rare as a snowball in June. There have been some none too scrupulous individuals who seem to have got hold of a supply of gasoline somehow and have kept running, but they are growing fewer and fewer as their stocks run out. It is absolutely out of the question that government gasoline should be supplied to private individuals from the fact that it would at once be detected, the official supplies being colored a violent blue, as is that in Italy a brilliant red.

It is curious *en passant* to remark that the supplying of a propelling force from the combustion of coal gas is no new thing in France. There was a little freight boat running on the Seine between Havre and Paris as far back as 1894, called the "Ideale," which for its propulsive power depended upon compressed coal gas in cylinders. There is a record, too, of similar efforts at about the same time at Neufchatel, in Switzerland, and at Dresden, in Saxony. In spite of all this mechanical traction, whether moved by steam, which requires coal in the first instance, or compressed air, which also is a product of the black diamond, unless actually engaged in some allied process of winning the war has very little chance of expansion or even continuance in war-rent France to-day.

Samuel Insull, chairman of the board of the Peoples Gas Light & Coke Company, of Chicago, and chairman of the Illinois State Council of Defense, has been authorized by the latter body to appoint a permanent committee which will pass on all proposed public improvements for the purpose of eliminating unnecessary work of this nature during the period of the war.

J. P. Conroy, manager of the General Gas Light Company, New York City, is serving on the Special Liberty Bond Committee of the Lighting Fixtures and Allied Trades for the Third Liberty Loan.

The Massachusetts Gas Companies has subscribed for an additional $250,000 to the Liberty Loan, making a total of $1,250,000 subscribed for. This amount will be divided between the Massachusetts Gas Companies and its subsidiaries.

How the Gas Companies Are Helping the Nation

F. Bradford Manker, formerly assistant superintendent at the Rome Gas, Electric Light & Power Company's plant, Rome, N. Y., who enlisted in the Twenty-third Engineers' Corps, Company K, Dec. 3, at Syracuse, and who was sent to Camp Meade, has arrived in France.

Milton R. Hurley, formerly employed by the Standard Gas Company, Keyport, N. J., as a meter reader and collector, is now in the United States Navy.

The Lindsay Light Company, of Chicago, has subscribed for $50,000 in bonds of the Third Liberty Loan.

The Public Utilities, Coke, Coal, Ice and Petroleum Industries have been placed in one division in the Third Liberty Loan drive at Chicago, and a quota of $5,850,000 has been assigned this division. More than 55 per cent of this quota already has been subscribed.

The San Diego Consolidated Gas & Electric Company, San Diego, Cal., reports that the following employees have recently joined the Government service, making a total of seventy-five employees of the company who are now in either the army or navy.

Paul T. Emery,
Private, U. S. Signal Corps, Aviation, Non-flying.
H. A. Lawton,
Private, U. S. Army.
J. G. Brown,
Private, U. S. Signal Corps, Aviation Section.
David H. Moor,
Private, U. S. Engineers.

F. A. C. Tocque, formerly new business manager of the Fort Smith Light & Traction Company, Fort Smith, Ark., has passed the necessary examinations for entrance into the Canadian Officers' Training Camp, and will shortly sail for England. He expects to receive a commission in the Royal Engineers.

T. Forman Screven, who left the Atlanta Gas Light Company, Atlanta, Ga., to join the 302d Stevedore Regiment as a private, has been promoted to a sergeantcy since arriving in France. His address is now P. O. 705, American Expeditionary Forces.

S. F. Coles, formerly with the Rochester Railway & Light Company, is now in France with the American Expeditionary Forces. He has not yet been on the firing line up to last reports, but passed through England and has had several months' experience with French winter weather, which has not impressed him as being better than anything he had known before by any means.

Clyde Potter, formerly advertising and publicity agent for the Southern Counties Gas Company of California, left May 1 for the U. S. Army Ordnance Training School at Camp Hancock, Georgia. After a six weeks' course he will go to an arsenal and then into the field.

Gas Sales Association of New England Devotes Itself to Reflector Type Room Heater at April Meeting

Fuel Administration Encouragement of Gas Merchandising—Use of Gas Water Heaters

The monthly meeting of the Gas Sales Association of New England was held Friday evening, April 12, at the Boston City Club, with thirty-six members and guests present.

Dinner was enjoyed, after which the meeting was opened by Governor Gould, who welcomed the guests, numbered among whom were prominent New England plumbers. He emphasized the point that subjects discussed at the meetings of this association were always open to constructive criticism, and invited discussion.

The following report of the joint committee of the Commercial Managers' Association and the Gas Sales Association on "Reflector Type Room Heaters," was read and it was voted that it be adopted:

Joint Committee Report

The joint committee of the Commercial Managers' Association and the Gas Sales Association have met, and at its two sessions have come to the following conclusions regarding the reflector type room heater:

Reflector Type Room Heater

The reflector type room heater is a safe, efficient and helpful addition to the household equipment, when properly and thoroughly sold, connected and installed by the gas company.

Your committee has some recommendations which follow, and come under three separate headings, namely, selling, connections and location.

Selling

Gas appliance manufacturers and gas companies should be most explicit and thorough in their instructions on the use of the room heater to the customer, and therefore recommend each heater sold should have firmly attached a card of instructions, showing proper way to light, position in room, length of flame, and how best results are to be obtained in heating and ventilating.

Connections

All connections should be made by gas company men, and should be iron pipe whenever possible, otherwise, a flexible tubing, and ends such as recommended by the U. S. Bureau of Standards, in its Jan. 10, 1918, edition No. 75, entitled "Safety for the Household," opposite page 80, sections "D" and "E."

Whenever flexible tubing is used, no cock should be placed on the appliance.

Location

This type and all type room heaters are made for localized heat, and care should be taken where they are placed in the room. Fireplaces are the logical and best locations. When located otherwise, care should be taken to keep them away from woodwork, curtains, hangings or furniture. Suggestions on proper ventilation of the room should be given to the customer.

General Suggestions

A Bray tip might be used instead of the present one.

A substantial guard to project from heater in some pleasing design.

Burners might be placed in line of vision.

All tips should be screwed into burner.

All gas companies should adopt as their standard the flexible tubing and ends, as recommended by the U. S. Bureau of Standards Bulletin No. 75, above referred to.

The selling price of a room heater should include its delivery, connection and readiness for use.

No room heaters should ever be connected up to the arm of a lighting fixture.

Respectfully submitted,

M. E. Abbott, J. B. Anderson, G. S. Barrows, R. Buckminster, J. C. D. Clarke, W. T. Pease, H. J. Pettingell, W. H. West, F. A. Woodhead.

Wm. Gould, Chairman.

Mr. Gould announced that he had news of the greatest import to the gas industry and gas appliance manufacturers of New England—news that in view of the uncertainty which hitherto has existed regarding the attitude of the Fuel Administration toward new business by reason of their adoption of the year of 1916 as a basis for fuel demands for gas companies for 1918-19, should dispel all cause for depression on a subject of vital importance.

Mr. Gould then introduced C. N. Burnell, secretary and treasurer of the Gas & Electric Improvement Company. Mr. Burnell read a letter which he addressed to the New England board of Fuel Administration, which embraced a number of questions regarding its attitude toward new business by gas companies and the reply which he received, the substance of which is that in the opinion of the board, coal can be saved by using gas for cooking, water heating, general household purposes and localized heat—that the use of gas for these purposes is economy.

Merchandising

Mr. Burnell felt that the weight of such an opinion from the Fuel Administration should remove all cause for worry concerning the immediate future of the gas industry.

Mr. Gould said there could be no further excuse for the restriction of the sale of gas appliances, and that we should take advantage of the biggest opportunity gas companies ever had; that if appliances could not be sold under present conditions they never could. He said he would ask for permission to have the letters included in the minutes of the meeting and for use for publication.

Mr. Ripley announced that George Barnes, formerly commercial manager at Reading, sailed for France this week as lieutenant in the U. S. Ordnance Department.

Elmer Stack, of the Stack Heater Company, gave an illustrated address on "Facts Not Generally Known About the Use of the Gas Water Heater." Introducing the subject, he said that he considered that the essence of every sale was service, and that literally no sale was ever complete while a service remained to be performed, that every purchaser of a gas water heater bought a service which he was at all times entitled to receive.

Mr. Stack's talk dealt with the practical end of the gas water heater business and covered the installation of tank heaters, conditions under which they were operated and common causes of trouble, together with methods for guarding against danger. The point was brought out that the tank heater as originally built had a comparatively small heating capacity, but that with the demand for quicker and better water this capacity had been increased, with the result that unless care is exercised in the use of this type of heater, the boiler to which it is attached is subjected to an undue strain for which these boilers are not intended.

Mr. Stack presented interesting statistics of many tests which he had conducted covering the length of time, temperature and pressures required to bring about unsafe conditions. Emphasis was made of the importance of having a dependable safety or relief valve on any kind of a hot-water heater connected to a pressure boiler, and he said that he believed anybody making such an installation owed it to themselves and their customer to take every possible precaution that would tend to eliminate or minimize danger.

Governor Gould announced that the next meeting, the last one of the year, would be held Friday, May 10, at which George Barrows would present a paper on "Gas Heating."

The meeting was adjourned at 9.45.

Cozy Comfort With Gas

Such an enticing picture of boudoir or den comfort was pictured by the Beacon Light & Los Angeles Gas Appliance Company, Los Angeles, Cal., that the sale of these gas lamps was greatly stimulated thereby. Their window disclosed a nook in a boudoir, with a marble mantel in the background, beneath it being a fireplace with gas firelogs, and fender of brightly polished brass. On the mantel was a clock, small lamp and marble statuette, while above it was draped a large flag. Drawn up to the fire was a long divan, piled high with pillows, on which reclined the wax model of a young woman in dainty boudoir gown of blue, lace-trimmed, reading a book. (This figure was borrowed from a local dry goods house, and a card in the window so stated.) At her elbow was a small stand on which was a box of candy and a gas reading lamp. At the other side was a dressing table, strewn with toilet articles and a few feminine belongings, and here was shown another pure white light. A tall, narrow panel down in front, adorned with a painting of a Grecian lamp, said: "For an atmosphere of absolute contentment, there is nothing like plenty of good light." Another window was filled with a score or more of gas grates against a white background bordered with gold cord. Among them was a large card: "When you come to this grate you know that you have found what fire comfort really is." Other pertinent cards, which sang the merits of the little cheerful grates, were: "With this grate you get all the comfort—and then some—without dirt or trouble." "Why chance annoyance of disagreeable odors when this grate is absolutely odorless?" "Not only a cleanly convenience, but you get the heat—more of it than you deemed possible," and "This grate not only gives off heat, it radiates heat, something entirely different from what you have been accustomed to." One of the heaters was shown in operation, its cheerful glow looking very comfortable in the evening. A card in front of it suggested:

CHILL CHASERS

Spring has come, but you still need a chill chaser these chilly nights and mornings. A gas grate will keep you comfy, when it is not cold enough for a furnace fire. Get one to-day.

Electric Company Boosts Gas Unknowingly

Chicago is now witnessing the interesting spectacle of an exclusive electric power company boosting the use of gas, though perhaps unconsciously. The Commonwealth Edison Company, during the last few weeks, has been operating a domestic laundry appliance exhibit in the center of its beautiful showroom. The principal features of the exhibit are a gas-heated electrically operated washing machine and a gas-heated electrically operated family ironing machine.

It is not at all an uncommon occurrence for a prospective purchaser to inquire about the gas-heating features of these machines, and electric company employees in charge of the exhibit, of course, tell them how small is the cost of the gas consumed and how much more efficient the gas-heating features make the machines.

Catchy Verses Advertise Heaters

Franklin & Boyce, Los Angeles, Cal., displaying a full line of heaters, some enamelled black, others white, call additional attention to them by the catchy little verses attached to each:

Our gas heater from Kalamazoo
Heats hot water at the faucet for you.

If you want hot water quick
Our gas heater will do the trick.

You would not think to see her smile
She's in hot water all the while.

Gas into the burner goes—
Hot water from the faucet flows.

In the background was the lithograph showing a young fellow enjoying a tub bath: "Hot water any time you want it—no waiting for furnace or range—simply apply the match to the burner and in a few minutes your tub is ready."

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Why Has No One Ever Thought of It Before?

Now and then one of us is seized with an inspiration and gives utterance to an idea, the advantages of which are so obvious that it does not require a second thought to comprehend them. Such an idea is the projected Illinois Gas Research Society, which will bring the gas man, the gas consumer of a particular class, and the gas appliance manufacturer together in one association with a common interest and on an equal footing.

A fact we often overlook in selling industrial fuel gas is that the prospect is just as anxious to affect an economy in his process as we are to sell gas. The American Gas Engineering Journal is frequently reminded of this by requests it receives from publications serving other fields for permission to reprint industrial fuel articles that it has run. As might be expected, every facility is offered for such republication, and thus two ends are served—the gas man in his own journal gets the data on which to sell an installation and the manufacturer in his journal gets the data from the same article that makes him want to buy the installation.

But the possibilities that lie in this new association conception go deeper. The manufacturer tells the gas man the story of his process and its ins-and-outs, the gas man tells him what appliances already available can be used in it, and the appliance manufacturer tells both what changes or adaptations can be made to fill in the deficiencies. It is an excellent combination. Each gets an insight into the other's business, and therefore can work to the best advantage.

The Need for Higher Individual Efficiency

Too many clear thinkers are prophesying an unprecedented development in the gas industry in the near future for anyone to safely ignore the possibility.

Beside the gas industry that is pictured, the gas industry of to-day is a very small institution, and, we are told, the development is to come suddenly. But where are the operators to come from—the vast army of trained employees that must be found if we are to double our size almost overnight?

The answer is that they will not be found. Untrained hands aplenty will be available, but there will have to be a head to direct them.

The possibilities that will be afforded the gas man who thoroughly knows his business in the bigger gas industry that is to come seem boundless.

These are days when the individual gas man, in direct personal interest, if no higher motive can be found, would do well to make sure that he is trained and educated, not merely to the point of competence to discharge his present task, but to the point of being able to impart sufficient information to many untrained people to enable them to supplement his efforts during the

time they are acquiring experience and knowledge towards enabling them to do responsible work on their own account.

The AMERICAN GAS ENGINEERING JOURNAL sees ahead in the gas industry one of the most striking expressions of the theorem, "High-grade work for high-grade minds and supplementary work for untrained minds," ever presented. The trained man will have to exploit his training to the maximum by throwing off his shoulders all details and other time-consuming tasks that the untrained may be able to handle.

It is a time to study ourselves as to individual efficiency. Is there lost motion in our individual working methods? If so, we must find and eliminate it. Are we doing things to-day that the office boy would do just as well, even though he took a longer time to do them? We should get the habit of turning such tasks over to the office boy. Only in this way will the gas industry be able to get a sufficient value from its—at such time—relatively few trained minds when the big days come.

Heat Values Set Too High

So much is being said about the fallacy of the heating value standards generally set, that it would seem that regulatory commissions must soon take cognizance of the factor of "maximum service rendered for every dollar of expenditure."

Those who have studied the problem agree that the high standards which are the rule rather than the exception mean nothing to the average consumer in the way of additional service; in other words, that there is a surplus of excellence that is wasted.

Rome wasn't made in a day, and we cannot expect rational standards with the dispatch that reason would indicate that we should. Gas companies in general have expended so much energy in doing away with the archaic candle-power standard that they pause to get their breath before they begin battling energetically to obtain a sensible heating value standard. This will come in the future.

There is no doubt that the standards most commonly set are an attempt to approximate the gas that was furnished under the former candle-power standard. There is no basis or reason underlying them. They are merely a product of men's instinctive dread of doing something radical.

The battle for a rational heating value standard, like the generally won battle for the abandonment of the candle-power standard, is essentially the consumer's battle being fought by the gas man, with the consumer, in nine cases out of ten diligently abusing his champion. It is a battle to obtain for him a better value for his dollar.

The sooner we get rational heating value standards, the better for all concerned. The consumer will spend less money for a given amount of service and the gas man will not be continually distressed with the thought that twenty-five per cent or more of the quality he is putting into his gas is wasted energy. But the mills of the gods grind slowly, and in this faculty they haven't anything at all "on" the average regulatory commission.

Women and Machines in Industry

An anonymous diatribe, that a recent editorial on the possible labor situation after the war drew down on our heads, presents a question that many have thought of, but few have mentioned prominently. The reason, obviously, is that it is something that there is little reason to worry about.

"Do you know," asks our anonymous critic, "that when the men come back after the war they will find themselves displaced by women and machines?"

Frankly, we do not, we regret very much to say, and we are thoroughly in sympathy with the men. None of them will find any difficulty in getting employment when they return, but it will be a different kind of employment than they left.

With very few exceptions, these men are developing. The drafted man who was withdrawn from employment as an elevator man will not come back to that task. His horizon will be broadened beyond such labor, and his brain will be trained to a higher plane than such a task requires. There will be a place for him in that higher plane—more than one place, perhaps.

So it is with all of them. Even the strictly mental and technical worker is developing. The kind of life he is now living is quickening to the mental faculties and to the development of will power and decision.

Inducting women into the industry is not half so much a provision for a present emergency as it is a provision for the future industrial welfare of the country.

The perfection of machine power holds out no threat to human labor. It will never displace it. The most it can do is to increase its earning power and reduce the hardships and hazards of its existence.

We regret that women are not being inducted into industry at a more rapid pace, and that the devising of miracle-working machines is not a matter of daily routine. The need is acute, and will become more acute. The output of this country must be increased many fold, and the increase will durate years beyond the war.

There is an acute labor shortage now—there was even before hundreds of thousands entered the armed services—and there has been no material relief as to machines, and relatively little as to women workers. Nor will there be after the war.

In our own undevastated country we are several years behind in necessary public works. Think of where they must be in Europe. Many of our soldiers, doubtless,

will remain there after the war to help them out in their huge tasks. We will get little in return in the shape of common labor immigration. The death toll has been huge. Even if there had been no devastation Europe would have no excess men to send.

We do not think it un-American to encourage women to enter the industries. We think it is essentially American. The development of the American republic has been one of the predominant factors in placing woman on her present plane. Man has in the past been pretty much the despot of all things earthly, principally because he controlled the purse strings. Women financially independent will have considerably more to say about their place in the social order than women who are as a class dependent.

We think the present phase is advantageous, both to women and to industry. Both can but benefit, and labor will not suffer.

Publicity—Has It a Value?

Once upon a time there were two big gas companies. Both faced war-time conditions, chief among which was a constantly increasing production cost in the face of a standstill selling price.

Both of these companies knew that sooner or later they would have to apply to the proper authorities for permission to increase rates. Both also knew that such applications, as a rule, are met with cries of "stop thief" on the part of politicians and that section of the daily press which cannot resist the temptation of playing to the grandstand.

It came to pass that while such things were in the minds of the managers of these companies, a record-breaking blizzard swept over the country disorganizing almost every branch of industry. The gas companies suffered in proportion to other properties, but they felt the call to public service and bent every energy towards supplying an unprecedented demand for gas.

While the managers and employees of other industries were at home huddled around their gas grates, bemoaning the shortage of coal and their inability to get to work, the managers and employees of the big gas companies were at their usual posts working harder than ever, with the result that through their efforts and foresight hundreds of women and children were kept from freezing, and much suffering and damage to property was averted.

Just about this time a representative of a gas journal went to the office of one company and asked if there wasn't a story. The information he sought was freely given to him, and, through him, to the public, to whom it was strikingly brought home that the gas company in its community was a benefactor and not a grasping octopus, as interested persons and publications had striven to make it believe. From this article the local press derived inspiration for editorial expression of appreciation of the company's work, and gas consumers wrote to their newspapers, expressing gratitude for the service rendered by the gas company.

At about the same time, another journal representative went to the office of the other company, and said: "What are you doing for the public in these extraordinary times?" The information he sought was not given to him, and so the story of the company's great service to its consumers was never told.

Some day each of these companies may want some change which requires public endorsement. Each of them, doubtless, will advertise. One company's publicity will carry conviction. The other's will be taken with a grain of salt. Both will be labelled "paid advertisement." But in the case of the one, what the company pays for space to tell, the public will have already learned through its own news sources. For the first company the way has already been to a degree prepared. The second had the same asset, but did not capitalize it.

Must Have Greater Latitude as to Heat Value of Commercial Gas

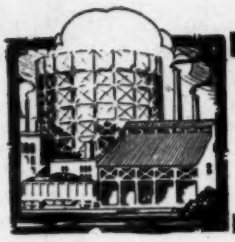
J. H. Maxon Suggests Distributing Industrial Fuel Gas in Different System of Mains—Asserts Furnishing General Heat for Houses and Buildings Is Unwise

If we are to bring about the best economic conditions as to producing and supplying manufactured gas, we must have greater latitude as regards heat value of commercial gas, and wherever a gas utility can show that an advantage can be secured by supplying a gas of lower heat value than the present standard, that utility must be allowed to make such adjustment, declared J. H. Maxon, in his paper at the recent annual meeting of the Indiana Gas Association.

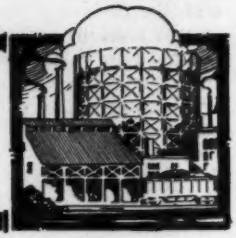
The major part of the present and future supply of manufactured gas in this State, and, in fact, throughout the country, must be secured from the carbonization of bituminous coal. The coal gas plant, however, is not flexible as to output, and the enormous increase in demand and the great fluctuation of demand make the consideration of flexible methods of production imperative.

Waste heat from ovens and benches for producing steam to be used with coke to produce "blue gas," and the mixing of the "blue gas" with the coal gas, is a plan of operation offering many possibilities. The use of bituminous coal in water gas generators in place of coke or anthracite, also is worthy of careful investigation.

The growing demand for manufactured gas to be used in industrial heat application offers vast possibilities to the manufacturer. Distribution of industrial gas of a different quality than that served for domestic use, and by means of separate systems of mains, is in immediate prospect. The fallacy of attempting to furnish manufactured gas for the general heating of houses and buildings has become fully apparent.



NEWS OF THE GAS INDUSTRY



Unique Possibilities Afforded in Projected Gas Association

Illinois Gas Research Society Would Bring Industrial Gas Consumer and Gas Man Together on a Common Ground

A new sort of gas organization is in the process of formation at Chicago, and if the plans of the promoters do not miscarry it will inaugurate a new era in the gas industry, an era of co-operation not only between gas men and gas men, but between the gas manufacturer, the gas consumer, the gas appliance maker and all other business men in any way interested in gas.

The name of the new organization will be the Illinois Gas Research Society. Its chief promoter is Horace H. Clark, industrial gas engineer of the Public Service Company of Northern Illinois and secretary of the Illinois Gas Association, who also is father of the idea. The research society would not conflict with the interests of any existing gas association for, so far as can be learned in Chicago, there is at present no organization with a purpose similar to that of the proposed research society.

Briefly, the purpose of the society will be to create a better feeling between the gas companies and their customers, and to solve in a mutually beneficial manner the problems of each. Though the organizers contemplate that the society will have its greatest utility in serving the industrial gas man and the industrial gas user, it will take up the problems of any other phase of the gas industry brought up by members. Present plans are to have regular monthly meetings, preceded by an informal luncheon. The meetings would be more in the nature of "get-together affairs" than of strictly parliamentary gatherings.

Mr. Clark has sent out to a large number of gas men in Illinois and a few neighboring States an outline of the plans for the research society, and the organization meeting will be called probably within a week or two. Already favorable responses have been received from various parts of Illinois and some outside territory, Mr. Clark reports. Big industrial gas consumers, Mr. Clark says, are even more enthusiastic about the proposed organization than some gas men themselves.

Speaking of the need of such an organization, Mr. Clark said:

"Gas manufacturers, gas consumers and gas appliance men could learn much from each other in an informal conference. The gas company has nothing to hide from its customer. If we were selling air for $1 per 1,000 cu. ft. we might be justified in avoiding our customers. But we have a fuel of known standard value and give the consumer full value for his money."

Mr. Clark was sponsor for an innovation along this line at the recent convention of the Illinois Gas Association when he induced several big industrial gas consumers to address the meeting and tell the gas manufacturers how in their own individual cases they had turned to gas from other fuels and had profited greatly thereby.

Menomonie Plant to be Sold at Auction

On June 4, 1918, all the property of the Menomonie Gas Company, now in receiver's hands, will be sold at public auction before the door of the Court House in Menomonie, Wis.

The Wisconsin Trust Company, receiver of the gas company, has just issued notice of the sale, which was on April 6 ordered by the United States District Court at Madison in the suit of the Union Trust Company against the Menomonie Gas Company, Badger State Lumber Company and the Crane & Ordway Company.

In the sale will be included all the property of the company in that city, real and personal. It takes in the plant, all machinery and appliances used in the making of gas, the pipes, mains and meters, tools, implements, franchises, contracts and, in fact, everything of value in the hands of the receiver.

The purchaser, however, will be required to assume the receiver's outstanding contracts, so that the service to the Menomonie public and property owners will not be interrupted. This sale will mark the beginning of the reorganization that will put the business upon a stable basis. It is anticipated that the assets will be bid in by the present bondholders.

Wilmington Has Narrow Escape from Gas Famine

Wilmington was near a gas famine on April 3 at about 4 p. m., when the Wilmington (Del.) Gas Company resumed the manufacture of gas at the plant in South Justison Street, which had been put out of business by an explosion of mysterious origin on that morning, when the turbine house was wrecked, together with its equipment. In this part of the plant were two turbine blowers, one of which was completely wrecked, while the other had all of the steam and blower connections severed. By hard work the connections for the better of the two machines had been completed and the making of gas was resumed.

At that time, however, the reserve supply of gas in the big storage tank, which had held 1,000,000 cu. ft. in the morning, contained only 37,000 cu. ft., and, fearing it would not be possible to resume operations so soon, the company was preparing to shut off the gas entirely. However, after the steam connection had been made

with the turbine it was found that it was in working order, and the plant managed to limp along with its aid from that time on, and there was no break in the service, as far as the city was concerned.

General Manager Schutt said that the difficulties resulting from the explosion had been overcome to such an extent that the entire gas service —city and suburban—had been restored. Because of the bad condition of the wrecked blower, the company was able to obtain a new one at the works of the Terry Steam Turbine Company at Hartford, Conn. If the damaged machine will warrant rebuilding it will be put in shape and held in reserve, while there is another new one coming which was ordered last November.

Additional precaution is being taken in the matter of guarding the plant, which is protected by an 8-ft. iron fence.

Commission Fixes Candle Power Standard for Atlanta

Supplementing and strengthening its rule that the Atlanta (Ga.) Gas Light Company must at no time furnish gas to its consumers of less than 550 heat units, the Georgia Railroad Commission recently ordered that it shall not be permissible for the company to furnish gas of less than 11 candle-power.

Petition Filed for Increase by Des Moines Company

The Des Moines (Iowa) Gas Company recently petitioned council for an increase of 25 cents per 1,000 cu. ft. in gas rates, making the charge $1.15.

Big Rapids Company Denied Increase

The temporary injunction restraining the Big Rapids (Mich.) Gas Company from raising rates above those provided by the city franchise has been made permanent by Judge Vanderwerp. The injunction limits the company to the franchise rates.

Petition Filed for Increased Rate by Nashua Company

Application for an increase in gas rates has been made to the public service commission by the Nashua (N. H.) Light, Heat & Power Company.

Seattle Consumers to Get Rebate

By an opinion of the State public service commission on the construction of its gas rate order of Jan. 31, the Seattle Lighting Company will be required to refund approximately $1,000 to gas consumers of Seattle, Wash.

Dispute recently arose over the company's interpretation of the commission's order under which it refigured at the $1.25 rate gas furnished prior to Oct. 31, 1917. A. L. Valentine, then superintendent of public utilities, asked the commission for an opinion as to whether its order was intended to be retroactive and authorize the gas company to refigure at the new rate gas furnished prior to Oct. 31 last, when the rate for gas was $1 a thousand.

In a letter to H. R. Clise, secretary of the gas company, the commission holds that the gas company misinterpreted its order and had no right to refigure on gas consumed prior to Oct. 31, 1917.

The gas rate in effect prior to Oct. 31 was $1 per 1,000 ft. net. Shortly before Oct. 31, the commission issued a tentative order fixing the rate at $1.15 net plus a ready-to-serve charge of 25 cents, and indicated that in the final adjudication the company would rebate amounts collected in excess under that tariff, when a final order was issued.

On Jan. 31, the commission issued an order finally establishing the sliding rates now in effect: $1.25 for the first 1,000 ft. and 5 cents for each additional thousand. The order contained a proviso that should the charges collected for gas, including the readiness-to-serve charge, for the period from Oct. 31, 1917, to Feb. 1, 1918, exceed the amount due from any patron under the new schedule of rates, the lighting company should then credit the difference on the February bill, and in the cases where the patron had discontinued the use of gas pay to him the amount of the excess in cash.

Ammonia Shortage in Illinois a Critical Situation

The severity of the ammonia shortage throughout the country was revealed in discussions at the annual convention of the Illinois-Wisconsin Ice Dealers' Association, held at Chicago recently. The situation so far as the ice manufacturers are concerned is critical, according to John P. Boyle, secretary of the National Association of Ice Industries.

"The Government has increased its requirements of ammonia from 80,000 tons per year to 800,000 tons," Mr. Boyle said. "All the chemical plants and all the gas plants in the country, with their present equipment, could not begin to fill this amount. Despite the fact that the Government is spending about $20,000,000 in constructing ammonia plants throughout the country, the first of these will not be ready to deliver ammonia until August.

"The Chicago artificial ice manufacturers, at the request of the Government, operated only six plants all winter so as to save ammonia for war work. The situation for the ice man is critical."

An investigation into the uses to which ammonia is being put in Illinois is now being carried on by the newly created ice division of the Illinois Food Administration, it was announced at the convention. It is probable that an ice dictator will be appointed for the State, and that the sale of ice, except to hospitals and similar institutions, will be limited next summer because of the shortage of ammonia, in the opinion of many of the men who attended the convention.

D. F. Crilly Charges That Political Influence Holds Back Rate Increase—Additional 8 Per Cent Increase Asked for

Objectors to the petition of the Peoples Gas Light & Coke Company for an increase in rates were squelched by two surprise attacks at the hearing which began before Commissioner Shaw, of the Illinois Public Utilities Commission, in Chicago on April 22.

First, attorneys for the gas company, instead of presenting arguments in favor of their request for a 22 per cent increase, petitioned the commissioner for permission to file an amended bill requesting a 30 per cent increase, and this permission was granted. Then the city's attorneys, "gas experts," City Hall hangers-on, newspaper men and the general public, which crowded the chambers of the commission, were told in a few plain words from the floor of

GROUP PHOTOGRAPH TAKEN AT RECENT ANNUAL MEETING OF INDIANA GAS ASSOCIATION

the room that politics is behind all the opposition to the gas company's request for permission to live.

The charge of politics was made by Daniel F. Crilly, a heavy stockholder in the Peoples Gas Light & Coke Company, as the representative of many other stockholders. Public utility men generally in Chicago have long been convinced that the persecution of the gas company is due to politics rather than honest conviction on the part of the city officials that the company was not entitled to what it asks. But this is, perhaps, the first time that the charge was made in an open court.

Mr. Crilly declared that the gas company had been harassed in all directions, and that as a result it is now in a very bad state of affairs.

"I tell you this business can be traced to the politicians and lawyers seeking fees," he declared. "I have a memorandum to show that during the last year twenty-four lawyers were employed by the city for expert gas advice, and that the city paid them over $100,000 for their services. The plan to tax the gas company $10,000,000 (the city's suit for the refund of alleged overcharges) is outrageous, and will be a serious loss to the stockholders."

Donald R. Richberg, attorney for the city in gas matters, and an assistant appeared before the commission to maintain the objections previously entered disputing the commission's ruling that the State body had exclusive jurisdiction in the matter of the gas company's application for increased rates. The Cook County Real Estate Board and the Chicago Real Estate Board also were represented by attorneys, who filed objections to the petition of the gas company and claiming that the gas company was not entitled to any part of the relief sought.

Commissioner Shaw gave the attorneys for the gas company two days in which to file the amended petition for a 30 per cent increase, and gave the objectors four days to file their amended objections.

Edward E. J. Ward, vice-president of the gas company, was the principal witness at the opening session of the hearing. He presented a statement showing that since the company's petition for a 22 per cent increase was filed a few months ago the cost of manufacturing gas has increased a further 8 per cent

Attorney Boetius H. Sullivan, for the gas company, said that the cost of labor itself was now $300,000 more than was figured in the company's statement of costs on Jan. 15, when the petition for a 22 per cent increase was filed. There has been a further increase of $1,300,000 in the cost of coal, coke and oil since that time, he said.

Central Illinois Company Asks Increase for Three Cities

A hearing was held by the Public Utilities Commission of Illinois last week on the petitions of the Central Illinois Public Service Company for permission to increase the rates for gas service in Taylorville, Charleston and Pana, Ill.

Court Rules Transcripts Must Be Paid for By Commission

Public utilities of Illinois who have occasion to appear before the public utilities commission of this State will be saved thousands of dollars in the cost of transcripts hereafter as the result of a decision handed down by the Supreme Court of Illinois on April 17.

The court ruled that transcripts of evidence covering orders of the commission filed in contest cases must be paid for by the commission. The decision was delivered on an appeal from the Sangamon County Court in a rate controversy involving the petition of the De Kalb County Telephone Company. The commission has attempted to compel the telephone company to pay for the transcripts in the case, but by the court's ruling the State body must stand this cost in this and all similar cases.

Another decision rendered by the Supreme Court on the same day

struck at the authority of the Illinois State Public Utilities Commission. Reversing the decision of the Circuit Court of Sangamon County, the Supreme Court held that the utilities commission is not a judicial, but a supervisory body, and for this reason had no authority to issue an order directing the Postal Telegraph Company to cease conducting a public telephone business in Illinois.

Increased Rate Announced be Taunton Company

Announcement was made by the Taunton Gas Light Company recently through Treasurer Walter T. Soper, that the rate for gas in Taunton, Mass., will be advanced the 1st of May 15 cents net per 1,000 ft.

Hearings on Several Illinois Companies Held Last Week

The petitions of five more Illinois gas utilities for increased gas rates were made the subject of hearing before the Illinois Public Utilities Commission last week. The hearings were in the cases of the Clinton Gas & Electric Company, the Madison County Light & Power Company, the Central Illinois Public Service Company, the Mount Carmel Public Utility & Service Company and the Cairo City Gas Company.

Manufacturers Section of N. C. G. A. to Hold Final Meeting May 10

At the suggestion of Harry D. Schall, president of the Manufacturers' Section of the N. C. G. A., a meeting of the section is called for Friday evening, May 10, at 8 p. m., at the Hotel McAlpin, New York City.

This meeting will undoubtedly be the last meeting of the Manufacturers' Section of the National Commercial Gas Association, as plans have been fully perfected towards the amalgamation of the American Gas Institute and the National Commercial Gas Association into the formation of a new association, to be known as the American Gas Association.

As the meeting of the two associations to perfect this amalgamation is to be held on June 6 and 7, at New York City, the affairs of the Manufacturers' Section of the N. C. G. A. must be brought to a conclusion, as this section has no status in the proposed amalgamation.

At the meeting to be held May 10, candidates for chairman and vice-chairman of the Manufacturers' Section of the new association are to be selected and submitted to the nominating committee for its approval. The subject of turning over all funds of the Manufacturers' Section to the new association is also to be discussed, as the new association agrees to assume all indebtedness which may be hereafter incurred by the Manufacturers' Section.

Members are asked to make every effort to be present at this meeting, and to show their co-operation in the support of this movement.

Utah Company Files Petition for Increase

The Utah Gas & Coke Company has filed a petition with the public utilities commission, asking permission to increase the price of gas 20 cents per 1,000 cu. ft. Manager George H. Waring says the advance is necessary, if the company is to continue in business, on account of the rapidly rising prices of materials entering into the manufacture of gas, and other expenses.

"The present scale of prices filed with the commission is as follows: For the first 2,000 cu. ft., $1 per 1,000 cu. ft.; for the next 20,000 cu. ft., 90 cents per 1,000 cu. ft.; for all over 22,000 cu. ft., 80 cents per 1,000 cu. ft. A discount of 10 cents per 1,000 is made if payment is made within ten days from date of bill.

Laporte Company Files Increase Petition

The Laporte (Ind.) Gas & Electric Company recently filed an application with the public service commission asking for an increase of 10 cents over the present rates.

Increase Asked By Keene Company

A petition asking for an increase in the rates charged for gas has been filed by the Keene (N. H.) Gas & Electric Company with the New Hampshire Public Service Commission.

10 Per Cent Increase Announced for Springfield

The Springfield (Mass.) Gas Light Company has announced an increase of 10 per cent in the cost of gas. It became operative on May 1, and, according to officials of the company, is unavoidable because of increased expense of production. Under the new rates the minimum is $1.05, and in some districts it goes as high as $1.20.

Oregon Company Asks for Increased Rate

At an investigation of the State public service commission at the City Hall recently, in the Oregon Gas & Electric Company case regarding increased toll rates, it was stated by the representative of the gas company that unless rates were increased it is questionable whether the plant will be able to continue operation.

The company has operating plants in Medford, Ashland, Phoenix, Talent, Roseburg and Grants Pass.

The commission representatives are making a physical valuation of all this gas company's plants and are expected to report their finding at an early date.

Engineers Will Hold National War Convention May 14

National steps to co-ordinate engineering society activities are expected when the representatives of the Committee on Engineering Co-operation, the Engineers' Council and the American Association of Engineers meet at the City Club, of Chicago, on May 14. Delegates of more than 250 National, State and Chicago societies have been invited to attend and take part in the program, with the slogan, "What more can engineers do to win the war?"

To conserve time the convention has been limited to one day, and all special sessions and committees are to complete reports in this period.

In order to assist the delegates in their survey of society service, all societies have been requested to submit answers to a questionaire sent out in advance.

The annual election of officers and directors of the American Association of Engineers will also take place. Members of the association will vote by letter ballot.

All technical bodies interested in the program are welcome.

New Oil Corporation Formed

A charter was issued by the Secretary of State to the Production Development Company, of Huntington, W. Va., to operate for oil and gas in Harrison County, Charleston, W. Va. Capital stock, $100,000; incorporators, O. C. Huffman, I. F. Vase, A. J. Crowell, E. J. Hofmeier and K. L. Burglass, all of Huntington.

Laclede Company's Franchise Assessment Increased

The St. Louis Board of Equalization increased the Laclede Gas Light Company's franchise assessment $1,500,000. The company will pay taxes this year on a franchise value of $10,000,000.

Increase Asked by Dover Company

The Twin State Gas & Electric Company, Dover, N. H., has asked the public service commission for permission to increase its rates 25 cents per 1,000 ft.

25 Cent Increase Asked for Keokuk

An increase in gas rates was requested by the Keokuk (Iowa) Electric Company from the city council recently. The company wants to increase the gas rates to $1.50 per thousand. The present rate is $1.25. The increased costs of material for gas is given as the reason for the request.

Increase Requested by Iowa City Company

The Iowa City (Iowa) Light & Power Company asks the privilege of charging $1.50 per 1,000 cu. ft. of gas, instead of $1.15 as heretofore. It is claimed that coal, oil, labor and all that goes to the manufacture of gas has risen materially since the present rate was established.

New War Map May Be Obtained Upon Request from American Meter Company

The American Meter Company, Inc., of 105 West Fortieth Street, New York City, announces that they have a new war map of the Western Front of Europe, showing the different points reached by the Central Powers and the Allies.

With the large number of our people over there this map should be of interest to a great many people in this country. As long as the supply lasts, this map can be obtained upon request from the American Meter Company.

No Advance for Duluth Consumers

There will be no increase in Duluth, Minn., for a considerable time, at least, it was announced recently by P. G. Phillips, commissioner of public utilities, despite the fact that municipally owned plants all over the United States have increased their rates.

Reports received by D. A. Reed, manager of the city of Duluth Water and Light Department, indicate that other cities have raised their prices on an average of 25 per cent. The high cost and scarcity of coal, increased salary demands of labor and other incidentals boosted in price, all have contributed to the situation.

"Though our profits have been cut down, we are still supplying gas at the old prices—50 cents for industrial and 75 cents for domestic per 1,000 cu. ft," declared Commissioner Phillips. "The new tank being erected by the Zenith Furnace Company is fast nearing completion, and that will add 1,000,000 cu. ft. to our capacity."

A Correction

Francis Engel, secretary of the Elizabethtown (N. J.) Gas Light Company, has called this JOURNAL's attention to various erroneous statements in an item in regard to the petitioned rate increase of his company on page 363 of the April 13 number of the AMERICAN GAS ENGINEERING JOURNAL.

It was stated in the item that the Elizabethtown company controls the Perth Amboy Company, to which it sells gas. This is not correct. At the present time the price it receives from the company for the gas is less than it costs to manufacture and distribute it, but the loss does not antedate the present high costs of materials.

The outstanding stock of the company is $299,240, the same as it was fifty years ago, but the invested capital at the present time is $1,500,000. Thus a reasonable return on the investment is not being made, though dividends on the stock have run as high as 40, 35 and 30 per cent.

East Boston Company Granted Increase

The gas and electric light commission has authorized the East Boston Gas Company, supplying that section of Boston and the city of Chelsea, to increase its price from 80 to 95 cents per 1,000 ft. for the duration of the war.

"During a period of such exceptional and unprecedented costs," says the board in its order, "it has seemed expedient and just to grant such temporary relief as the circumstances warrant." Should it be shown after the war that 95 cents is an excessive rate, it will be reduced by the commission.

Increased Rate Granted Oakdale Company

The railroad commission has authorized the Oakdale (Cal.) Gas Company to raise its gas rates to $1 net for the first 500 cu. ft. or less a meter per month. Also to $1.70 per 1,000 for the next 2,500 cu. ft., $1.50 for the next 5,000 cu. ft., and $1.10 per 1,000 for all consumption over 15,000 ft.

The company owns an artificial gas plant in Oakdale, Stanislaus County, and a transmission line for gas from Oakdale to Riverbank.

Central California Company Given Permission to Raise Rates

The Central California Gas Company, which serves Visalia, Exeter, Lindsay, Porterville and Tulare with gas, has been granted its request for increased rates, the State railroad commission having entered an order April 15 agreeing with the request in every particular. The new rates take effect May 5.

Seven Hundred of Rochester Company's Men Parade for Liberty Loan

Seven hundred employees of the Rochester Railway & Light Company paraded April 6 to help out the Third Liberty Loan.

Angelus Mesa District Gets Lower Rate

The board of public utilities was informed recently that the Los Angeles Gas & Electric Corporation has agreed to lower its gas rate in the Angelus Mesa district from 85 cents to 68 cents per 1,000 cu. ft., which

latter rate is applicable in District No. 1 recently fixed by the railroad commission.

Well Drilling Company Is Incorporated

Articles of incorporation were filed with Harden Bennion, Secretary of State, by the Head Drilling & Exploration Company, capitalized at $300,000. The company will engage in drilling oil, gas and water wells. Officers are: Roger W. Powers, president; Thomas Wilkes, vice-president; Franklin Riter, secretary and treasurer.

Temporary Increase for Painesville

Council at Painesville, Ohio, has granted the Painesville Gas Light & Coal Company a temporary rate of $1.50 per 1,000, or a raise of 50 cents. Their ten-year franchise expires May 4.

New Albany Company Denied Bond Issue Privilege

The privilege of issuing $300,000 addition bonds has been denied the United Gas & Electric Company, of New Albany and Jeffersonville by the Indiana Public Service Commission.

Franchise Tax of $3,586.02 Paid City by Cincinnati

City Auditor George P. Carrel has received a check for $3,586.02 from the Union Gas & Electric Company, of Cincinnati, Ohio, representing its franchise tax of one-half of 1 per cent on its gross earnings for the quarter ending March 31, 1918, amounting to $717,202.43.

Its gross earnings for the corresponding quarter of 1917 were $643,852.02, on which a franchise tax of $3,219.26 was paid.

Worcester Consumers to Receive Bills by Mail

The Worcester (Mass.) Gas Light Company recently sent out notices with its monthly gas bills, informing its customers that owing to the draft and other war conditions, so many changes have occurred in its force of bill distributors and collectors, it will be necessary, at least for a time, for the company to mail its gas bills to its customers, instead of sending them by the company's collectors.

March Earnings of Massachusetts Gas Companies

The net earnings for dividends of the subsidiary companies of the Massachusetts gas companies for March were $420,453, or $66,230 more than those for the corresponding month last year. Following are the March earnings in detail with comparisons:

Gas Dept.—	1918	1917	1916
Boston	$81,999	$117,019	$142,865
Newton	2,205	4,099	9,237
East Boston	*1,925	2,295	5,773
Quincy	6,063	1,441	1,864
Totals	$88,344	$124,855	$159,741
Coal Dept.—			
New Eng. coal	22,955	102,750	47,153
New Eng. coke	....	79,325	75,009
Federal coal	....	41,416	4,716
Boston T. B.	....	5,875	9,473
N. E. F. & T.	309,154	....	....
Totals	$332,109	$229,367	$136,353
Grand totals	$420,453	$354,223	$296,094

*Deficit.

Increased Rates for Rochelle Effective Beginning April 1

The State public utilities commission issued an order recently vacating the order of April 1, 1918, suspending the proposed increased rates for gas service in Rochelle, Ill., of the Rochelle Gas Company, and making effective as of April 1, 1918, until April 1, 1919, unless otherwise ordered by the commission, the proposed new rate.

Ithaca Rates Only Increased to Those Who Do Not Pay Within 7 Day Limit

At the meeting held recently in the council rooms, the Ithaca (N. Y.) Gas & Electric Corporation asked the common council for approval of a request to the New York State Public Service Commission for permission to increase the rate for gas in that city to $1.55 per 1,000 ft., on provision that a discount of 15 cents be given to those customers who pay their bills before the seventh of each month. At present the rate for gas is $1.40, so that the proposed plan, if granted by the public service commission after approval by the common council, will mean that the price to consumers will be the same as in the past except when they are delinquent in payment.

Estimated That Philadelphia Will Receive $3,000,000 Indirectly from Gas Consumers in 1918

Through the indirect taxation system in force by reason of the 1897 gas lease, Philadelphians this year will pay into the city treasury nearly $3,000,000. This heavy drain on citizens of moderate circumstances results from the rebate paid the city for each 1,000 cu. ft. of gas sold.

The unusually heavy sales during the first three months of the present year will carry the city's share far in advance of the $591,391 paid for the same period last year, while the figures will be further augmented by the fact that an additional 5 cents per 1,000 cu. ft. is payable to the city under the lease. Although no exact figures can be had in advance of the filing of the report, it is estimated that the city treasury will benefit to the extent of $700,000 or more for the first quarter.

Record sales during January, February and March prove that more householders are turning to gas for relief from heavy coal bills, and that, consequently, more citizens than ever before are contributors to this indirect revenue source. Gas stoves during the winter replaced many old-time coal ranges, while gas for lighting and other purposes is in more general use than ever in several hundred thousand modest households of the city.

Statistics show that the wage-earner is a large consumer of gas, thus proving that the greater portion of the revenue received from gas sales comes from those least able to pay the city 25 cents for each 1,000 cu. ft. of gas they consume. Suggestions made by officers of the producing company looking toward a reduction in the rate have uniformly been opposed by officers of the present city administration.

Naturally, the returns from winter months are the heaviest, but the general use of gas for cooking, washing, etc., during the hot months is counted on to prevent any material falling off in the high figures. During 1918 the city received $2,044,300.77 as its share from the sale of gas, while last year the amount paid into the treasury was $2,223,629.49. This year added consumption and an increased rebate are expected to add $600,000 to $800,000 more.

That the United Gas Improvement

Company will lose nothing in the long run by surrendering 25 instead of 20 cents to the city for each 1,000 ft. sold in this and succeeding years is proved by the manner in which the company has caught up with its revenue after previous reductions of 5 cents. When the city's share was increased from 10 to 15 cents the company caught up and passed its receipts in four years. The same was true when the city's share was increased to 20 cents.

Why a Gas Holder?

In selling the Storage Automatic Water Heater idea, the Long-Landreth-Schneider Company has made use of the gas holder as an example.

The purpose of a gas holder is to meet the variations between supply and demand, they explain. At times more gas is manufactured than used. The surplus is stored up in the holder. At other times more gas is used than manufactured. The deficit is drawn from the surplus previously stored up.

Were there no holder it would become necessary to increase the gas manufacturing plant many fold in order to have sufficient instantaneous capacity to meet the maximum demand.

And so it is in the science of water heating. The Storage Automatic Water Heater can be likened to a gas plant, the small heater of the storage system being the retorts, while the tank is the holder. This little heater keeps on burning until the tank is filled with hot water. Thus when needed, hot water can be drawn in as big a stream as the city water pressure and faucets will permit.

Were there no storage tank it would become necessary to have huge gas burners and extensive copper coils in order to have heat and heating surface sufficient to produce hot water instantaneously to meet the maximum demand.

However, the disadvantages of the instantaneous water heater do not lie only in the fact that a bigger heater is required, they point out. The other disadvantages to be considered are the high peak load of instantaneous water heaters permitting fewer heaters on your mains with a correspondingly small gas revenue; a big maintenance expense, placing a heavy burden on the operating department, and reduced water pressure caused by the water valve and friction in the coil, giving inferior hot-water service.

Portable Drive for Pipe Stock Designed and Built for Cutting Pipe at Toluol Plant in Minneapolis

The Minneapolis Gas Light Company has just completed the construction of a toluol plant for the manufacture of that product, which is so necessary for the United States Government at this time.

During the construction of this plant it was necessary to cut a great amount of pipe varying from 2 to 8 in. in diameter. To avoid consuming the time which would be necessary to measure the pipe and have it cut at the shop and then taken to the plant, the machine shown in the accompanying photograph—a portable electric drive for a Toledo stock—was designed and built to cut pipe at the toluol plant of the Minneapolis Gas Light Company.

The motor used is of 2 hp., having a speed of 1,050 revolutions per minute, which is reduced by means of two sets of bevel gears with a ratio of 4¼ to 1, making a total reduction of about 23 to 1. Connection is made to the stock through a telescopic shaft, two cross-joints and a socket.

In the picture the machine is shown cutting threads on an 8-in. pipe. On this size stock, 6 to 8 in. in diameter, the machine cuts at the rate of five and one-half threads a minute. On a stock cutting 2½ to 4-in. pipe, threads are cut at the rate of nine per minute at a cost of about 25 per cent less than if done by hand.

The motor with its frame and drive shafts weighs about 350 lb., and can be easily carried by three men. The three-legged frame allows the machine to set solid, no matter what the nature of the foundation.

Crisfield Company to Install New Boiler

The Crisfield Light & Power Company, of Crisfield, Md., is contemplating to install another 40-hp. return tubular steam boiler alongside of one in use now to replace a 40-hp. upright boiler which they sold.

The reason for this change is, the upright boiler occupied space which is more valuable for other machinery, and could not be placed to advantage in another spot. They are now in the market for a new boiler.

This JOURNAL is indebted to R. G. Anklam, superintendent of the company, for the foregoing information.

PORTABLE ELECTRIC DRIVE MACHINE CUTS NINE THREADS PER MINUTE ON 2½ TO 4-IN. PIPE

Tool Steel Heating Furnace Claimed by Manufacturer a Step Forward in Furnace Development

The Triad furnace, patented last year by W. R. Bennett, is considered by the manufacturer a pronounced step forward in furnace development as regards the economical and successful treatments of both carbon and high-speed steels.

The advantage of preheating both carbon and high-speed steels is conceded by metallurgical and research engineers of the present time.

The process usually employed in the treatment of high-speed tools consists of preheating in the furnace to about 1,500 deg. Fahr., then removing the matter to another furnace heated to a temperature of from 2,200 to 2,300 deg. Fahr., and finally quenching or cooling from the high temperature, and drawing the temper by means of an oil bath, lead bath or dry heat.

The furnace is operated by a single burner, and is claimed by its builder to save 50 per cent of fuel bills. It occupies only 2 sq. ft. of floor space and can be installed in any tool room.

It is operated with either oil or gas, and by a single burner, which is not built into the furnace. The furnace is cylindrical in shape. To better insure uniform temperature and obviate cold corners it is thoroughly insulated.

It consists of three chambers, the lower one for hardening, the intermediate one for preheating, and the top one for drawing the temper.

Heat for hardening tool steel, it is claimed, can be obtained in ten minutes from a cold start. Heat for hardening high-speed steel in the lower compartment can be obtained in twenty minutes. Pieces up to 4 in. in diameter can be treated in this furnace.

The temperatures in both the intermediate and the lower compartments are determined by a pyrometer, and a thermometer is employed to determine the drawing temperature in the top division. This is controlled by an air inlet from the main air supply and controlled by a valve and mercury gauge.

This furnace is manufactured by the Bennett Metal Treating Company, of Elmwood, Conn.

THREE STEPS OF STEEL HEAT TREATING MADE IN SINGLE UNIT

Utilities Commission Makes Reduction in Price of Gas While Lowering Heat Units

The Illinois Public Utilities Commission has granted the Public Service Company of Northern Illinois the right to reduce the heating units in the gas supplied to Evanston and other municipalities of Illinois by this company, but it also has determined that the company must make a reduction in the price of gas.

The decision of the commission is a compromise between the contentions of the company and the pleas of the municipalities, and comes as a result of a hearing lasting more than seven months, which followed the entering of a petition on the part of the public service company to obtain permission to reduce the heating units to 565 B.t.u.

The decision of the commission gives the public service company permission to reduce the heating units of gas to 565 B.t.u., but reduces the cost of gas to the municipalities 5 cents for the first 1,000 ft. and 10 cents for each additional 1,000 ft.

Baltimore Consolidated Will Carry Out Existing Contract With City if Increase Petition is Granted

Officials of the Consolidated Gas, Electric Light & Power Company, Baltimore, Md., notified the Baltimore authorities that the company has no intention of raising the rate on gas to the city in the event of the success of its application to raise the consumers' rates which is now before the public service commission. One of the executives of the gas company said that there is a standing contract between the company and the city, and there is no intention of vitiating this or any other binding contract in the event of its request being granted. He said it was never in mind that the city would be affected by the raise as its supply of gas is usually arranged for by special contract.

The gas company has applied to the commission to raise the consumers' rate 10 cents per 1,000 cu. ft. for ordinary uses and from 35 to 50 cents per 1,000 cu. ft. for the supplementary rate. The city will withdraw from the fight to prevent the company from raising its rates.

Hortonville Plant Sold

The Hortonville (Wis.) Light, Heat & Power Company's plant has been sold to Adolph Haller. Mr. Haller has announced his intentions of dismantling the plant and selling the machinery as junk.

A New Method of Extinguishing Chemical and Oil Fires

The problem of protecting gasoline, oils, chemicals and other inflammable liquids from fire has always been a pressing one. Recently a method of attacking this problem has been devised, which consists in covering the burning surface with "fire-foam," which is essentially a carbon dioxide foam very light in specific gravity, which floats on the burning surface and snuffs the fire out.

As is generally known, it is useless to attempt to extinguish oil, gasoline or chemical fires with water or ordinary fire extinguishers. Water sinks to the bottom of the liquids, or, putting it in other words, the burning liquids float on the water and the fire is not extinguished. If extinguishing gases are used they are blown away by the draft of the fire and very little good is accomplished, especially if the fire is of any great magnitude.

This new method of extinguishing fires confines the carbon dioxide gas in a thick, tough blanket of foam, which floats upon the lightest liquids, cutting off the air supply from the fire. The substance is claimed to be quite permanent, lasting an hour or

more, which prevents the possibility of the fire reflashing.

The product has been developed by the Erwin Manufacturing Company, of Milwaukee, Wis., who have designed special apparatus for applying it so that tanks even 40 or 50 ft. or larger in diameter containing inflammable liquids can now be given protection from fire.

Manufacturer Optimistic as to Possibilities of New Gas Range Lighter

The Strause Gas Iron Company, Philadelphia, Pa., manufacturers of the "Iwantu" comfort gas irons, are putting on the market their gas range lighter, which is known as the "Iwantu" gas range lighter, shown in the accompanying illustration.

The most important features of this lighter, as claimed by the manufacturers, are simplicity and effectiveness. Instead of the usual four flashes it has only one direct orifice way mounted on a swivel, with which any burner, including the simmering burner, can be easily reached. All that is required is to direct the flame to any desired burner and press the handle. The orifice plug is so constructed that carbon cannot be deposited in the hood, regardless of how the pilot is regulated, and the pilot can be lit as easily as any gas jet. The cup in which the orifice plug is placed is so constructed that drafts or other influences cannot extinguish it.

The lighter can be used on ranges and cookers with equally good results, and the manufacturers claim that, as far as they know, it is the only lighter that can be successfully operated on a cooker. It eliminates the danger of burning the operator's hands or clothing. When the housewife is ready to clean her range the lighter may be turned away from the side that she is cleaning, and if accidentally she should touch the operating valve the flame, instead of shooting toward her, shoots away from her.

The manufacturers claim for this lighter a much longer life than the lighters heretofore used, and hardly any maintenance cost. If the orifice should be clogged with any dust or other foreign matter that might get into it a little wire or pin run through it will at once remove any obstacle, it being a very easy matter to get to it to clean.

The lighter has a very short stem, 4 to 5 in. long, and the flame shoots a distance of 10 to 12 in., thereby reaching any of the back or simmering burners as easily as the front ones.

The manufacturers claim that they made this lighter after years of experimenting, fully aware of the wants of the gas fraternity and range manufacturers of what a lighter should be.

THE LOUISVILLE GAS & ELECTRIC COMPANY earned $2,838,589 gross in 1917 and $1,525,084 net. The gain in gross was about 16 per cent and in net about 10. The balance sheet of Dec. 31 shows $9,000,000 of refunding bonds and $3,129,200 of underlying issues. Bond interest is covered more than twice by the net earnings, giving the bonds a strong position. There is also an issue of $1,600,000 of notes junior to the bonds and a floating debt of $1,389,000. The notes, of course, are not so well secured as the bonds.

THE COLUMBIA GAS & ELECTRIC COMPANY has declared a 1 per cent quarterly dividend, payable May 15 to stock of record April 30.

Rate Increase Sought by Salem Company

The Salem (Mass.) Gas Light Company has filed a petition with the public service commission for permission to increase the price of gas 20 cents per 1,000 cu. ft.

Personal Notes

CHARLES K. BROWN, one of the old-time employees of the Boston Consolidated Gas Company, has just completed fifty years of service with the company. He began work in the Boston Gas Light Company in April, 1868, as an inspector of fittings, and was transferred to the collection department in 1871, and continued in that position until he was placed on a pension, some years ago. He insisted, however, on continuing work with the company, and is still engaged at the offices at 24 West Street. Mr. Brown, who was born on Sept. 27, 1839, in Auburn, N. H., still enjoys good health, as he nears his seventy-ninth birthday. The president of the company has written Mr. Brown a letter of cordial congratulations on his fiftieth anniversary of employment in the Boston gas company, emphasizing Mr. Brown's loyal and faithful service.

ELIZABETH STRYKER has accepted a position with the Standard Gas Company, Keyport, N. J., as meter reader and collector, and will assume the duties looked after by Milton R. Hurley, now one of Uncle Sam's Navy men.

E. S. FINNEGAN, who has temporarily held the position of meter reader and collector of the Standard Gas Company, has been placed in charge of the distribution work in Keyport and Keansburg, N. J.

ALBERT FRANKLIN KENYON, of Providence, R. I., died April 18 at his home, 113 Prairie Avenue, in his eighty-fourth year. Mr. Kenyon had been connected for a long period with the Providence Gas Company as work superintendent.

CARROLL MILLER, general manager of the Western United Gas & Electric Company, of Aurora, Ill., for the past several years, has accepted the general management of the Philadelphia Gas Company, of Pittsburgh, Pa. Mr. Miller has tendered his resignation to the Western United Company, but will remain in Aurora until such time as his successor is appointed and becomes familiar with his duties, which will probably be several months hence. Mr. Miller in assuming his new duties will also become vice-president of the several subsidiary companies owned by the Philadelphia company. A part of Mr. Miller's work on assuming his new duties will be the building of the immense coking and gas plants that are to be installed by the Pittsburgh company.

R. E. LOGAN became superintendent of the Greenville gas plant of the Southern Public Utilities Company April 1. Mr. Logan succeeds F. D.

Coward, and has been with the company some two years. He was formerly with the Charleston & Western Carolina Railway, and came to this branch as assistant to Superintendent Coward.

CHARLES A. MUNROE, vice-presi- of the Public Service Company of Northern Illinois, was elected president of the Industrial Club, of Chicago, at the annual meeting of the club last week.

GEORGE HOLBURTON has recently resigned from the management of the San Francisco Gas & Electric Company. He was formerly manager of the Oakland Gas, Light & Heat Company. He will devote his future to the development of his properties in San Mateo County.

JOSEPH F. GUFFEY has resigned as president and general manager of the Equitable Gas Company and the Pittsburgh & West Virginia Natural Gas Company, and as general manager of the Philadelphia Gas Company and affiliated natural gas and oil companies, because of his candidacy for the Democratic nomination for Governor of Pennsylvania.

FREDERICK EGNER, of Washington, D. C., testified as to the conditions of the plant of the City Gas Company, of Norfolk, Va., at the time it was purchased by its present owners at a recent hearing.

J. S. WHARTON has been appointed manager of the Helena (Ark.) Gas & Electric Company. He was formerly manager of the Southern Gas Improvement Company, Henderson, N. C.

THE WATERBURY (CONN.) GAS LIGHT COMPANY held the annual meeting of the directors April 19, 1918. The following tribute was read and recorded:

"Henry S. Chase, a member of this board, died March 4, 1918. Mr. Chase's connection with this company developed among his associates an appreciation of his personal friendship, and inspired respect and admiration for his talents and business judgment. The loss of these qualities will be keenly felt in the board which testifies its recognition of his counsel and consistent endeavors to make the service of this corporation universally acceptable to the public.

"Surrounded by demands on his vitality through his large private enterprises, he brought into our meetings unhurried advice and co-operation. Though known to us for many years, we never so thoroughly as now gauged his wonderful sagacity. We admired his courage, and his sudden passing away we deeply regret."

The directors of the company, whose appreciation of their late associate is thus expressed, are E. G. Buckland, J. P. Elton, E. O. Goss, R. F. Griggs, N. B. Smith, Harris Whittemore, E. H. Williams. After the adoption of the above minute Frederick S. Chase was elected a director to succeed his brother.

Societies and Associations

THE MICHIGAN GAS ASSOCIATION convention will be held at the Hotel Statler, Detroit, Mich., Sept. 12 and 13.

THE EMPLOYEES' ASSOCIATION, of the Fall River (Mass.) Gas Works Company, held the fourth of the departmental meetings recently, which was given by the manufacturing plants under the personal direction of E. R. Hamilton, assistant superintendent. About 150 of the employees attended. The supper, consisting of cold ham, potato salad, war bread, coffee, ice cream and cake, was served at 8.45. Charles Silverwood, Charles Meyers, J. Leach and William Booth performed in the kitchen, while William Wordell and his corps of able assistants officiated in the dining room. Music during the supper was furnished by the Gasco Orchestra. Robert B. Clark, superintendent of both plants, presented the speakers. Cornelius Donavon, who was called upon first, talked on the war, outlining the conditions of Germany from 1871 to the present day. He also spoke on the necessity of buying Liberty Bonds; S. E. Baker, assistant treasurer of the company, spoke on the war conditions; Edward D. Stebbins, vice-president of the club, spoke on the Liberty Loan, and suggested that the club buy bonds with its surplus money. A short business meeting was then held, with President E. R. Hamilton in the chair, and it was unanimously voted to buy $150 worth of bonds out of the balance of $167 in the treasury. The orchestra gave a large number of selections, most of which were of a patriotic nature. At the close "The Star-Spangled Banner" was played by the orchestra and sung by all. The clubrooms were decorated with various Liberty Loan posters and flags. Cigars were on hand for the men and candy favors for the ladies.

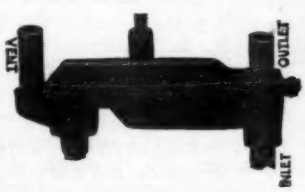
THE SOUTHERN GAS ASSOCIATION will hold its tenth annual meeting at Hotel Patten, Chattanooga, Tenn., May 22 and 23. M. A. Bowlin, secretary of the association, states that they do not intend to have over four papers and doubts very much if these papers will be printed in advance. A little change is being made in the program this year, and in view of the extraordinary conditions through which we have all passed, are attempting to make the meeting more of a general discussion and an exchange of views and experiences than a formal set program, as has been the practice in the past. They are limiting the length of the papers and the numbers, and have assigned to various members various subjects in which they are vitally interested and through which they hope to create general discussion and bring out many points of value to the other members. At a recent meeting of the executive committee, the date of the meeting was changed to May 22 and 23, instead of May 1, and on account of the conditions prevailing in every company they have limited the meeting to only two days instead of three, and have placed the convention entirely on a war basis. The entertainment features have been greatly curtailed, although not entirely eliminated, and have been placed on such a basis that there will be no burden on the association or the Chattanooga Gas Company. A very good attendance is expected, and it is hoped the meeting will prove beneficial to everybody attending. The sentiment of the association was overwhelmingly in favor of holding the convention, and the directors felt that, of all years, this was the year to get together and compare data. There was some opposition to holding the meeting this year, but it was put to a vote of the members, and the result was practically two to one in favor of the convention. Cards have already been received from nearly half of the membership stating that it was their intention to attend.

RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

HIGH PRESSURE



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(With Mercury Seal)

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ARTIFICIAL GAS GOVERNORS
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NATURAL GAS REGULATORS
For All Kinds of Pressure Reduction

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SERVICE GOVERNORS

"OLD STYLE"
(Without Seal)

Main Office and Works
ANDERSON, INDIANA

Construction Notes

Wisconsin Company Making Improvements

The Wisconsin, Gas & Electric Company, Racine, Wis., is making extensive improvements at its docks. Another modern and up-to-date coal hoist is being erected and the large main across the river, to be used for supplying gas to patrons north of Racine, is completed.

To Extract Toluol at Washington Plant

At the request of the Explosive Section of the War Department the State public service commission has given its consent to the manufacture of toluol. It is to be produced in the Seattle Light & Gas Company's plant, and will be made in Tacoma and Spokane as well.

The Tacoma plant is already shipping "holder and drip" oil to Eastern manufacturers. The company has had no request to start making toluol. It is prepared to do so as soon as ordered.

Toluol Plant at Chicago Running at Full Capacity

The toluol plant of the Peoples Gas Light & Coke Company, Chicago, is running at full capacity. The company has a contract with the Government for toluol for various munitions factories which involves in the neighborhood of $1,000,000 a year.

THE COLUMBIA GAS & ELECTRIC COMPANY recently issued the report of the consolidated earnings and expenses for March. The report shows: Gross earnings, $1,035,308.13 increase 1.7 per cent; operating expenses and taxes, $508,247.10, increase 4.5; net operating earnings, $527,061.03; other income, $162,050.62, decrease 15.1; total net earnings and other income, $689,111.65, decrease 4.5; lease rentals, etc., $296,776.58, increase 3.5; fixed charges (Columbia Gas & Electric Company), $59,833.34; surplus, $332,501.73, decrease 11.3. Three months ended March, 1918: Gross earnings, $3,468,292.66, increase 8.7; operating expenses, $1,722,720.03, increase 18.3; net operating earnings, $1,745,572.63; other income, $486,853.26; total net earnings and other income, $2,232,425.89, lease rentals, etc., $873,224.15, increase 2.1; fixed charges (Columbia Gas & Electric Company), $179,500.01; surplus, $1,179,701.73.

THE MASSACHUSETTS GAS COMPANIES' directors declared the regular semi-annual dividend of 2 per cent, payable June 1 to stock of record May 1.

THE STANDARD GAS & ELECTRIC COMPANY'S net revenue for the year 1917 was $1,566,051, compared with $1,664,199 in 1916, according to the annual report just issued. These figures, after deducting all interest charges, show balance equivalent to 6.56 per cent for the year 1917 on outstanding preferred stock and a figure of 7.42 per cent for the year 1916. In addition to this revenue, which is directly the return on securities owned, the company had $100,000 income from other sources in 1917, compared with $311,857 in 1916. The report, as customary, analyzes the company's affairs in detail.

Gross earnings of subsidiary companies last year were $19,341,587, an increase of 12.92 per cent, while net earnings were $8,523,325, a gain of 2.57 per cent. "Increasing industrial activity and substantial progress were recorded in 1917 in all of the communities served by the subsidiaries of your company," says the report. "This was reflected in materially increased gross earnings. Net earnings of all subsidiaries did not respond as satisfactorily. Our national participation in the war caused conditions resulting in greatly increased operating costs for practically all public utility companies in the United States. Higher cost of fuel, wage increases and heavier taxes, largely for Federal purposes, were the principal items of increased expense. While a part of the increased gross earnings is attributable to the manufacture of munitions and other war supplies, the greater proportion is due to the normal growth of the communities served and the increasing number of power users utilizing central station power in preference to continuing the use of their own less efficient plants."

In many communities operating companies have applied for and obtained higher rates for service. The rate increases are not reflected in the 1917 statements, but their influence is apparent in 1918 earnings statements thus far received.

The placing of securities of the respective companies in the communities served proved successful. From Jan. 1, 1917, to March 23, 1918, inclusive, local securities sales numbered 5,240, aggregating $4,008,350 par value.

Subsidiary companies now serve 386,810 customers, a gain of 39,164 during the year. Communities served aggregate 439, with an estimated population of 2,091,000.

HENRY OIL & GAS COMPANY, Terre Haute, Ind.; capital, $150,000; to operate oil and gas wells. Directors, George F. Kean, Adele Hecklesburg, Frank S. Rawley.

THE AMERICAN GAS COMPANY, for the year ended Dec. 31, reports gross income, $5,978,523; affiliated companies operating expenses, $3,235,498; affiliated companies, interest, depreciation, etc., $1,768,697; surplus, $974,328; American Gas Company, interest, etc., $535,680; American Gas Company dividends, $525,005; deficit, $86,357.

THE FULL BLOOD OIL & GAS COMPANY, of Osceola, Ark., filed articles of incorporation recently, the capital stock being $25,000. The incorporators are: C. W. Beale, of Little Rock, president; J. W. Trieschmann, of Paragould, and J. M. Landrum, of Luxora, vice-presidents; C. N. Faubel, of Little Rock, secretary, and C. L. Moore, Jr., of Osceola, treasurer.

THE WESTERN STATES GAS & ELECTRIC COMPANY has declared the regular quarterly dividend of 1¾ per cent on the preferred stock of the company, payable April 15 to stockholders of record March 30.

THE LONE STAR GAS COMPANY, Fort Worth, Tex., held its annual meeting on April 18, at which the following officers were elected: President, L. B. Denning, Columbus, Ohio; first vice-president and general manager, F. M. Lege, Jr., Fort Worth; second vice-president, M. W. Bahan, Fort Worth; secretary and treasurer, D. L. Cobb, Fort Worth; assistant secretary and treasurer, H. A. Jackson, Fort Worth, and R. W. Sterritt, Fort Worth; manager, natural gas department, F. L. Chase, Fort Worth; manager, oil department, W. P. Gage, Fort Worth.